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ABSTRACT

This is one of a set of curriculum guides for the Stoneham Elementary School Science Program (see SE 012 153 - SE 012 158). Each guide contains a chart illustrating the scope and sequence of the physical, life, and earth sciences introduced at each grade level. For each of the topics introduced at this grade level, an overview of the topic, a list of concepts to be developed, motivating ideas, suggested activities to develop each concept, a reading list, a list of supplies needed, and examples of student work sheets are provided. In most activities, the teacher is expected to involve all students in experimenting and applying scientific thinking. The topics covered in the grade one guide are: magnets, the earth in space, growing plants, weather and changes of state, animal diversity and characteristics, and human growth. (AL)

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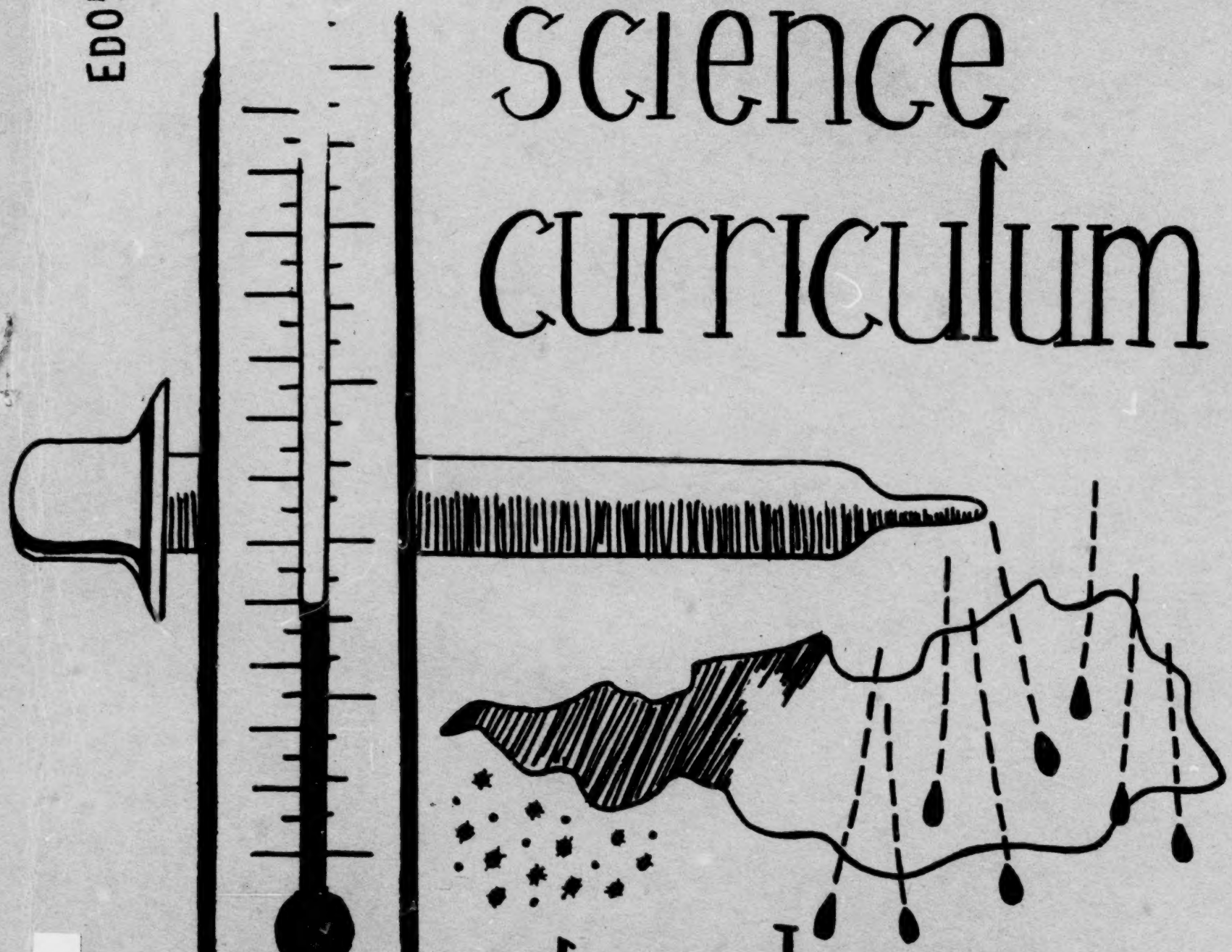
Elementary science curriculum



grade 1

stoneham, mass.

SE 012 153

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STONEHAM PUBLIC SCHOOLS

STONEHAM, MASSACHUSETTS

ELEMENTARY SCIENCE CURRICULUM GUIDE

GRADE 1

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FOREWORD

These units were written as guides for the teaching of science. The activities suggested are given to assist the teacher in illustrating the given concepts. In some instances she may use several activities, but only those which will best suit her class. In other cases the activities suggested follow a particular sequence which would encompass several days illustrating several related subconcepts along the way. It is not expected that the teacher stick rigidly to her curriculum guide. If deviating to include another concept, however, the teacher is advised to consult the other Stoneham Science Curriculum Guides to be certain that the concept is not introduced at another grade level. The teacher is encouraged to have reference materials in the classroom at all times for each unit.

Whenever possible, the teacher is expected to involve all the children in experimenting and encouraging application of the scientific method and thinking. This would involve the following skills:

1. to formulate hypothesis
2. to reason quantitatively
3. to evaluate critically
4. to draw conclusions
5. to select procedures
6. to define problems
7. to create charts and keep records
8. to use equipment effectively

It is intended that the teacher will adequately adapt this guide to her own class needs.

Sue Hopkins .....Grade 1
Judith Bowen.....Grade 2
Bette Littman.....Grade 3
Carol Bearse.....Grade 4
Joan Knipping.....Grade 5
Linda Young.....Grade 6 Co-Chairman
Mary White .....Grade 6 Co-Chairman

February 1970

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STATEMENT OF PHILOSOPHY

We have all experienced the confusion of sorting out events that come at us, seemingly, haphazardly. We try to perceive the link, the relationship, that will make everything clear, that will help us decide. In fact, from the time we are born the main activity of our lives is trying to sense some order in our constantly changing world. Science is a tool that man uses to seek order. Modern science has evolved not only as a body of fact, but also as a logical approach to problem solving. In the elementary school this aspect of science should not be overlooked. The study of science should encourage growth in the ability to solve problems, as well as introduce a background of knowledge.

To achieve this goal the emphasis must shift away from the teaching of "facts" to the development of such abilities as: observation, collection of information, classification, formation of hypotheses, data interpretation, generalization, and prediction. Thus the process of learning becomes just as important as the information obtained.

This approach to teaching science transforms the classroom into a laboratory and the children into scientists working within it. The teacher provides enough orientation so that the children develop goals of their own, and guides them through concrete experiences that nurture both technique and knowledge of facts. There are many outcomes of a lesson: skills, facts, aroused curiosity, ideas, and discovery of new relationships. The pupils gain confidence in their own ability to learn, a process which will be valuable long after the facts are forgotten.

SCOPE AND SEQUENCE CHART

SCOPE AND SEQUENCE CHART

		GRADE 1	GRADE 2	GRADE 3
PHYSICAL	Chemistry	Changes in Matter melting freezing heating	Changes in Matter solid liquid gas molecular	
	Physics	Magnets push and pull		Magnets attraction repulsion Simple Machines their uses relationships of applied force
LIFE	Human Body	Growth bones teeth nutrition health	Growth muscles skeletal structure emotions	
	Plants	Reproduction seeds bulbs spores regeneration	Life Activities structure classification seed plants non-seed plants	Ecosystem pond community
	Animals	Classification vertebrates	Life Activities life cycle insects brine shrimp	

SCOPE AND SEQUENCE CHART

GRADE 4	GRADE 5	GRADE 6
Molecular Theory matter molecules energy relations		
Electricity static-current production conductors **Sound** waves, vibration, pitch, reflection	**Heat** motion expansion-contraction conduction, convection insulators	**Light** photons reflection waves color
The Ear producing and hearing sounds	**Cellulor Organization** cells tissues organs	**Genetics** heredity genetic code dominant and recessive traits
		Photosynthesis leaf structure carbon cycle
Simple And Complex Five basic life processes cellular structure classification		**Animal Behavior** inherited and learned **Ecology** balance in nature disbalance

SCOPE AND SEQUENCE CHART

	GRADE 1	GRADE 2	GRADE 3
EARTH — Astronomy	Earth-Sun-Moon rotation day and night		Solar System orbits revolution seasonal change
EARTH — Geology		Fossils dinosaurs fuels evolution	Earth Composition soil rock formation classification
Meteorology	Changes in Weather clouds		Water Cycle cloud formation precipitation weather prediction

SCOPE AND SEQUENCE CHART

GRADE 4	GRADE 5	GRADE 6
	Forces in Space centrifugal centripetal gravitational	Motion in Space movements of planets parallax, triangulation gallaxies atomic energy
	Earth Changes surface interior Ocean Environment water food exploration life	
Influence on Man air ingredients of weather effects of weather		

PUSHES AND PULLS

I TITLE - PUSHES AND PULLS

II BACKGROUND

The first grader approaches his study of magnets with great enthusiasm. As a pre-schooler, he played with magnets, toyed with their push-and-pull properties, and perhaps has sensed the wonder of it all. This unit provides the children with an opportunity to learn about magnets by using them.

III CONCEPTS TO BE DEVELOPED

A. Magnets attract some objects and not others.
B. The pull of the magnet can pass through glass.
C. The pull of the magnet can pass through water.
D. The pull of the magnet can pass through your finger.
E. The strength of a magnet is not necessarily determined by size.
F. A magnet is strongest at its ends.
G. Magnetism is not restricted to one shape of magnet.
H. Unlike poles attract and like poles repel.
I. Magnetic materials can become temporary magnets.
J. Magnets should never be heated or pounded, or the magnetism will be weakened or lost.

IV MOTIVATION

Without showing the magnet, scatter some nails on a table. Ask the children if they can think of ways in which the nails might be picked up quickly. Introduce a magnet. Choose children to come forward and use it to pick up the nails.

V ACTIVITIES

Concepts	Experiences
Magnets attract some objects and not others.	Materials: iron buttons, plastic buttons, rubber balls, candy, coins, hammers, iron nails, leaves, wood rulers, erasers, tin cans, screws Procedure: Assemble as many of these materials as you can. Include metals other than iron and/or steel, such as brass, silver, and copper. Allow the class to test the objects, placing the things the magnet attracts in one pile and the things the magnet does

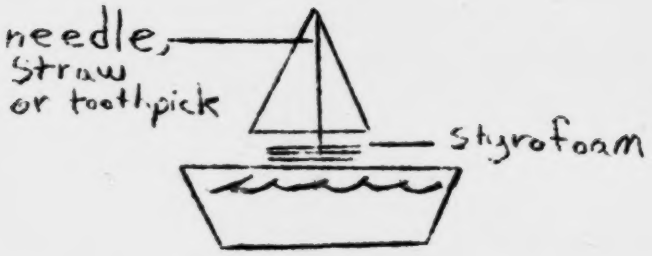
not attract in another pile. After they determine if they are magnetic or non-magnetic, they can classify them on a chart. An excellent way to keep records for this experiment is to fasten on a chart actual objects which magnets pick up.

Extension:

Magnets attract some objects and not others.

Materials: shallow glass dishes, glue, magnets, steel darning needle, construction paper, styrofoam blocks, toothpicks, paper straws, scissors, water

In this experiment the children will try to move boats across water by using a magnet. For the hull of the boat you may use styrofoam. The boats should all be made alike except for the masts. Construct the masts from toothpicks, straws, and steel needles. The sails should be made from paper of various colors, so the children can easily identify the boats. The boats can then be put into glass dishes filled with water. Make them aware that the glass dishes, the magnets, and the boats except for the masts, are all alike. Then proceed with the experiment to see which boat will move when we hold the magnet close to the boat. Let them discover that the boat with needles for the mast is the one that will move.



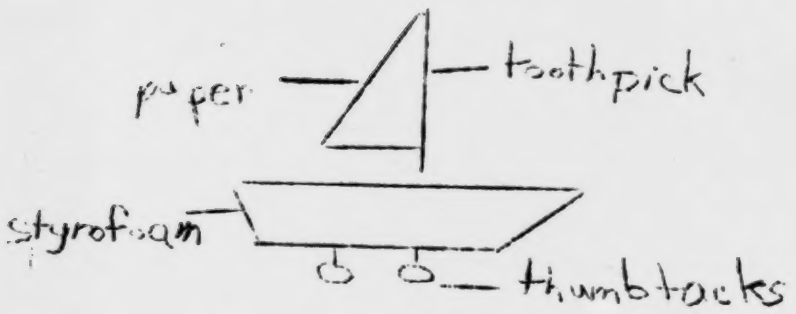
Have the class make a list of ten small objects (pencil, match, etc.). After guessing which objects will be attracted by a magnet, let the class use a magnet on the objects to see which guesses were right.

The pull of the magnet can pass through glass.

Materials: paper clip, drinking glass, magnet

Procedure: Put the paper clip into the glass. Let the children take a magnet and move the paper clip up and down or around the side of the glass. Before letting the children generalize that the pull of a magnet can go through

The pull of the magnet can pass through water.



glass, put other magnetic objects in the glass.

Extension: The children can make "dancing dolls." Put a pin into the cork of a bottle cap. Attach a paper doll to the pin. Put a flat piece of glass over two books and have the children use a magnet to move the dolls.

Materials: paper for the sail, styrofoam for the hull of the boat, two thumbtacks for the bottom of the boat, toothpick for the mast.

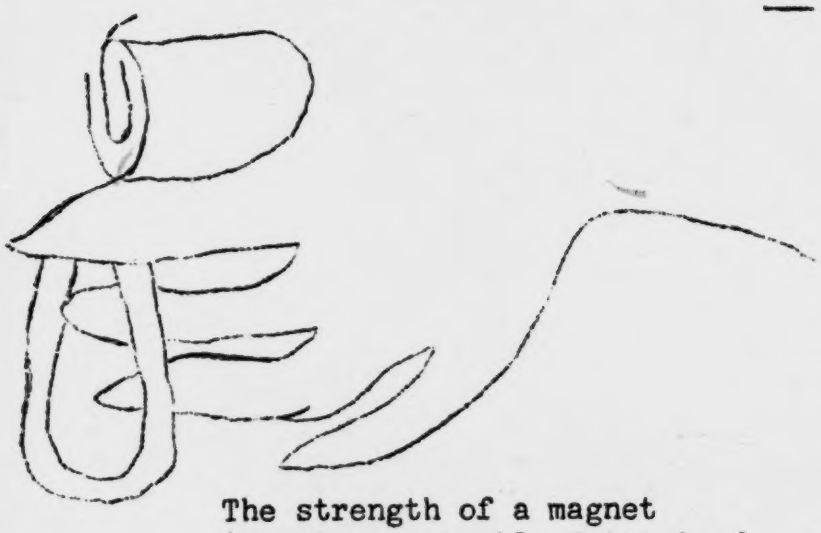
Procedure: Have each child make a boat. The boat should not be more than 1 ½" long. Have them construct the boat as illustrated. Then let them put the boat in a glass pan filled with water. Put the glass pan on two piles of books the same height. Then have the children move the magnet slowly under the bridge.

Extension:

Materials: several corks, thumb tacks

Float several corks bearing thumb tacks on the lower surface in about one inch of water, using a shallow plastic tray; move a magnet near this.

The pull of the magnet can pass through your finger.



Materials: magnet, paper clip

Procedure: Have a child hold a paper clip between his finger and thumb. Then hold a magnet on top of his finger. Then have the child move his thumb away -- the clip hangs from the finger.

The strength of a magnet is not necessarily determined by size.

Extension: Have the children try other materials such as plastic, wood, paper, copper, and aluminum foil to find out whether the pull of the magnet can pass through other non-magnetic materials.

Materials: horseshoe magnets of various strengths and sizes, clips and small nails

Procedure: Assemble the magnets of many different sizes and strengths. The children can test the strength of the magnet by determining the length of a paper clip chain that can hang from the magnet. You may wish to make a chart and record the number supported by each magnet. The children will discover that many times more paper clips hang from small magnets than from some larger ones.

Extension:

Materials: rubber band, magnets of various strengths, paper clip

Procedure: Prepare a simple measuring device to enable the whole class to see the differences. Obtain a thick rubber band and slip a paper clip on to it. Loop the rubber band over some fixed object such as a drawer pull. With the magnet catch the paper clip and pull it away from the drawer pull until it has extended the rubber band. How far does the magnet stretch the rubber band before it pulls the paper clip away?

Materials: large and small magnets, some small ones which are very strong and some large ones which are weaker than the others, iron and steel objects, such as book ends, large screws, nails, tin cans, etc.

Procedure: Play a game of "Prediction." The teacher chooses a small group of children to ascertain that the magnets all have magnetic power by having them pick up paper clips which have been spilled on top of a desk. After the assurance that the magnets all will attract the clips, the children are asked to predict which magnet should be chosen to pick up certain objects. The class may be divided into teams with a child from each team predicting which magnet should be chosen to pick up the heavy objects. Then let the child test his prediction to see if he was correct. Scores should be kept by the teacher.

A magnet is strongest at its ends.

Materials: paper clips, small horseshoe magnet, construction paper, long stick, string

Procedure: Have the children make a fishing game. Trace or draw the fish on construction paper. Color the fish as desired. Slip a paper clip over the mouth of each fish. The fish pond may be a cardboard box. Attach a small magnet to a string that is tied to a long stick. This is the fishing rod. Have the children experiment to find out which part of the magnet picks up the fish. They will discover that the ends of the magnets are the strongest.

Extension:

Materials: bar magnet, iron filings, sheet of white cardboard

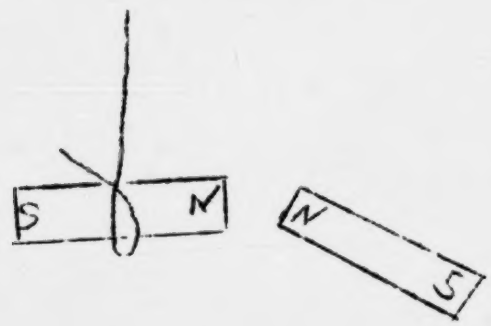
Procedure: Pour some iron filings on a sheet of white cardboard. Spread the filings evenly, then place a bar magnet on the filings, and lift the magnet. Very few, if any, will cling to the middle of the magnet.

Magnetism is not restricted to one shape of magnet.

Materials: horseshoe magnet, U-shaped magnet, bar magnet, disk magnet, cylindrical magnet

Procedure: Place the different shaped magnets on the science table. Let the children manipulate the various shapes of magnets. They will discover that magnets act the same no matter what their shape is.

Unlike poles attract and like poles repel.



Materials: two bar magnets

Procedure: Before doing this experiment, it is wise to make a distinction between the different poles of a magnet. This can be done by painting the N pole of each magnet with some nail polish. Have a child hold two magnets far apart and then gradually move the N and S poles toward each other. As the children work with the magnets, they will discover that two unlike

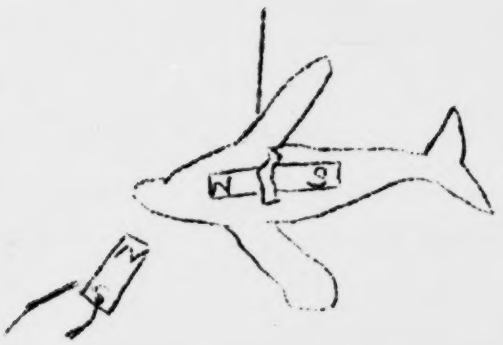
poles attract. Have the child bring the two N or painted poles of the magnets toward each other and experience the repulsion. Also, let him bring the two S poles together and observe what happens.

Extension:

Materials: two bar magnets, string

Procedure: Suspend a large bar magnet so that it hangs freely. The bar magnet must have its poles marked N and S. Say something such as this: the magnets have the letters S and N on it. Do you suppose that both ends are alike? Shall we try and see? Take one bar magnet and hold it near the S pole of the suspended magnet. What happens? (refer to worksheet in this appendix)

Materials: bar magnets, toy airplanes, string, tape



Another activity that can be used to reinforce learnings about like magnetic poles repelling and unlike poles attracting is to use toy airplanes.

Procedure: Suspend the airplanes on strings and attach bar magnets along the bodies. The planes can be made to fly by the proper use of magnets operated by the children.

Magnetic materials can become temporary magnets.

Materials: paper clip horseshoe magnet, steel wool

Procedure: Let the children make a magnet. Take a paper clip and open it. Straighten it out. Now it's just a steel wire. Rub the wire with one end of your magnet. Rub the wire 20 times; always go the same way. Then let the children test the wire. Take some steel wool and pull it into bits. Does the wire pick up the bits? The children will discover it is a magnet.

Magnets should never be heated or pounded, or the magnetism will be weakened or lost.

Materials: two sewing needles, bar magnet, paper clips, a flame, a heavy glove

Procedure: Magnetize two large steel sewing needles by stroking them about one hundred times in one direction with one pole of a bar magnet. See how many paper clips each will attract. Then pound one needle against the floor and heat the other needle in a flame until it is red hot. Make sure you wear a heavy glove when you hold the hot needle. Now see how many clips each needle will attract and hold.

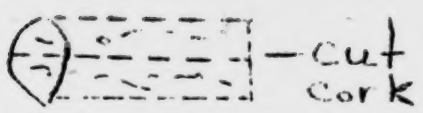
VI APPENDIX

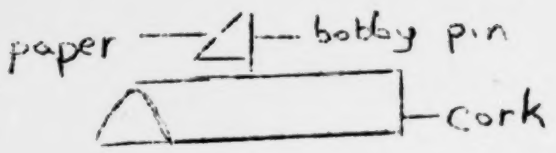
Enrichment Activities

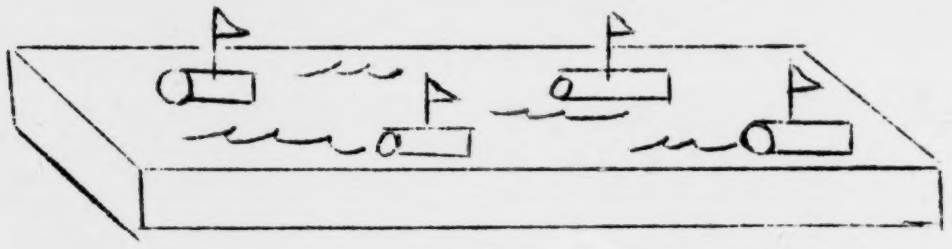
Boat Races

Make a fleet of boats with "bobby pins," large corks split in half and paper for the sails. Make the boats go by moving a magnet near them. Have a race between boats in a "flotilla."

The children will enjoy doing this activity in their spare time.



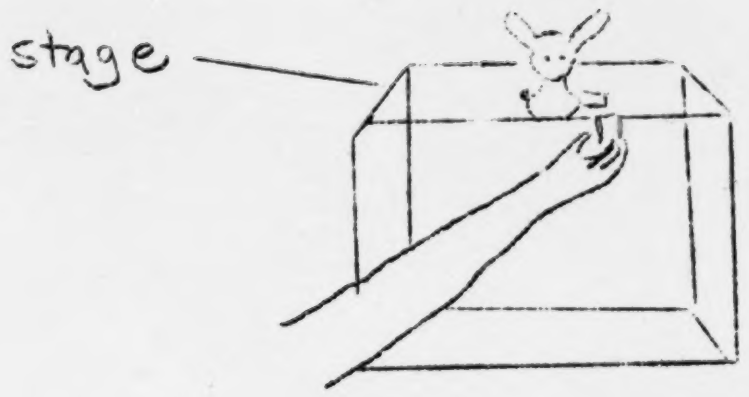




Gifts

Pot holders, oven mitts,and aprons are made with tiny magnets sewn in a corner. If any of your pupils know how to sew, you might encourage them to prepare gifts for their mothers.

Magnetic Theater



This activity is purely a play activity, "just for fun." But it involves more manipulation, more muscular co-ordination, and more experience with scientific principles. The children love to make paper figures move across a little stage.

The paper figures may be made free-hand or traced from books. Sometimes interesting figures may be cut from greeting cards. Remember to keep the figure small so that the force of magnetism can move them easily. Besides pictures of people, the children may use animals, automobiles, trains, and boats. A more elaborate stage may be made from a cardboard box and plays such as "The Three Billy Goats Gruff" may be acted out.

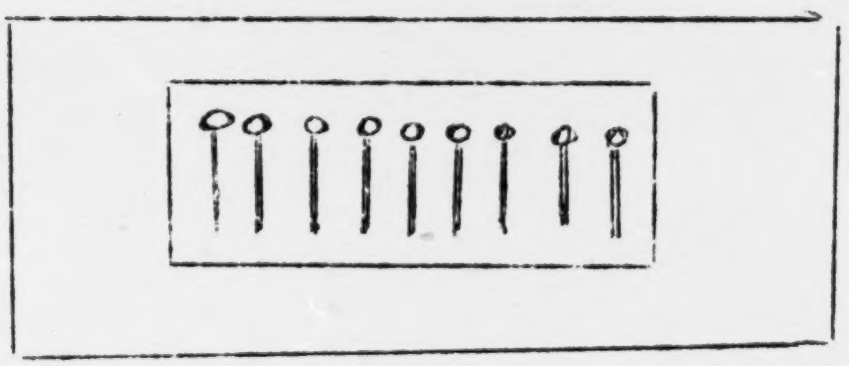
A street may be marked out on a thin but rigid cardboard and plastic cars may be made to move along the street if a nail is taped to the bottom of each car and a magnet is moved under the cardboard.

Games

Magnetic Pick-Up Sticks

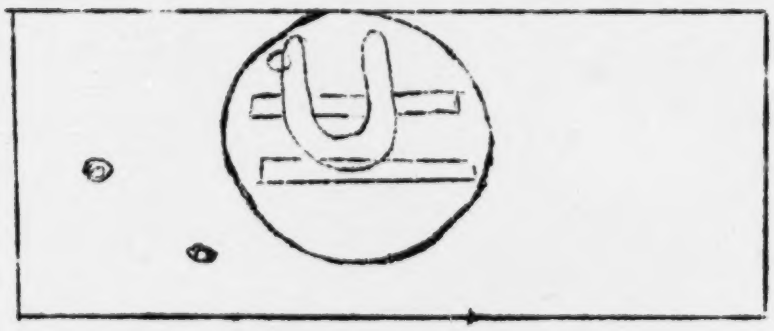
Ten penny nails are used and they are laid side by side on a board that has been ruled off in spaces ½" wide. Each nail is laid as close to the center of each space as possible. The trick is that of removing one nail at a time with the magnet without, in

the least, disturbing adjacent nails. It can be done but not as easily as one might think. The children will enjoy this activity in their spare time.



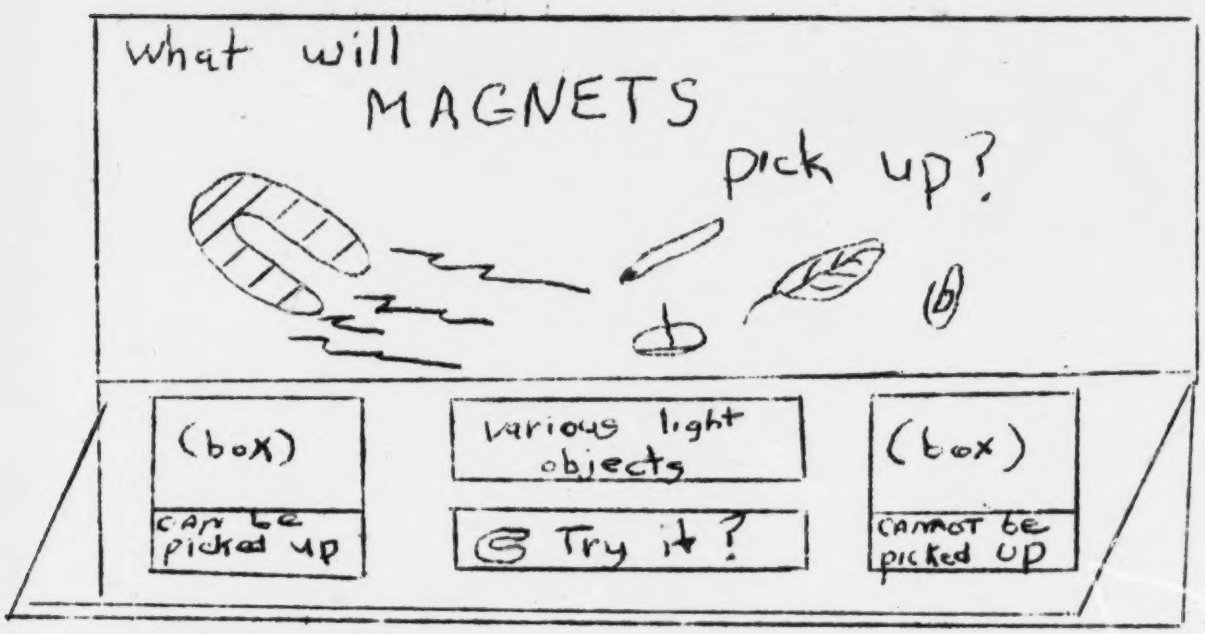
Magnetic Tiddly Winks

First we mount a horseshoe magnet on a board so that its pole faces are upward. We then cut a 12" circle or disk from a board and place the magnet directly in the center of this. Each player is given an equal number of iron washers: his winks. Shooting from outside the boundary established by the board disk, the player who first succeeds in making all his washers stick to the magnet, wins.



Make a needle into a magnet, then push the needle into a piece of wood (boat). Put the boat on water. Hold on end of the magnet near the top of the needle. Then try the other end of the magnet. You will see that one end pulls the boat to the magnet. The other end pushes the boat away.

Bulletin Board



Worksheet Idea

Push and Pull

S N

S N

(push or pull) _____

S N

N S

(push or pull) _____

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ABOVE YOU

I TITLE - ABOVE YOU

II BACKGROUND

The principles of space, distance, and size relationships will be covered in this unit. To a child, the sky is a part of the earth. In this unit he will be introduced to the earth as it really is, a planet in space, with the sky for its ceiling.

III CONCEPTS TO BE DEVELOPED

A. The earth is a big, round ball.
B. Gravity holds us to the earth.
C. The turning of the earth causes night and day.
D. The sun is very large.
E. The sun is much larger than the earth; it looks smaller because of its distance from the earth.
F. The sun is very hot.
G. The sun shines all the time.
H. An opaque object blocks the sun's light and casts a shadow.
I. With the sun as a source of light, the length and direction of shadows change during the daytime.
J. The moon is smaller than the earth or sun.
K. The moon revolves around the earth.
L. The moon shines by reflected light.
M. There are countless stars in the heavens.
N. Stars shine during the day as well as night, but we don't see them.
O. Stars do not really twinkle and they do not have real points, as we picture them.
P. Some stars seem to form groups which we call constellations.
Q. Planets have no light of their own.
R. The sun with the planets moving around it, is called the Solar System.

IV MOTIVATION

An imaginary rocket trip into space!

We will get into our imaginary rocket, count down, blast off for a look into outer space. The teacher will then show a space filmstrip, with very little comment while the filmstrip is being shown. After a quick tour from the projector, we will land our rocket back on earth, and turn the lights back on. Then the teacher will ask the children many questions about space.

Is the earth round?
Is the sun hot?
How many stars are there in the sky?
(etc.)

Most of the children will know very little about space, and will be motivated to start a Space Unit.

V ACTIVITIES

Concepts	Experiences
The earth is a big round ball.	Materials: globe, toy ship. Place globe where children can see that it is round. Hold the globe steady with one hand. Take the toy ship with the other hand and move it on the globe away from the children until it moves out of sight. Explain that when objects disappear over the horizon, it is an indication that the earth is curved. Extension: Ask if any of the children have visited the seashore. Have they ever watched a ship sail out to sea? Urge them to describe what they saw.
Gravity holds us to the earth.	Have the children extend their arms in a horizontal position. As they attempt to hold their arms in this position, they will experience a pull that quickly produces fatigue and tiring of the muscles in the arm. This is the force of gravity. Have the children jump up. Lead them to the conclusion that anyone who jumps off the ground comes back to earth because of gravity. Extension: Let the children draw pictures of what a day without gravity would be like here on earth. When they have finished the pictures, have them explain what they have tried to show. Find a gravity toy or a gravity tool. Bring the gravity toys or tools to school. Arrange a collection of these items on your science table. (toy dump, three-minute egg-timer, coin bank, hammer, tumbling clown, bowling pins, rocket with a parachute, etc.)

Concepts	Experiences
The turning of the earth causes night and day.	Materials: globe, flashlight, clay figure Secure a clay figure on the North America section of a globe at the place where the children live. Shine a flashlight on one side of the globe so that it lights the half of the globe facing the flashlight. Turn the globe from west to east and have the children imagine they are turning with the globe. Have them tell when they would be lighted by the flash-light (during the day) and when they would not be lighted by it. Materials: earth poster, sun poster, flashlight One child with poster, "Earth," turns around. Another child with poster "Sun" holds a flashlight toward "Earth". This will show the concept that sun lights half the earth and the other half is dark. Extension: Have the children determine the number of hours they are in daylight and how many hours they are not. This activ-ity may be repeated periodically and a chart of the findings displayed.
The sun is very large.	Materials: globe, pea Compare size of earth and sun. Use a globe as the sun and a pea as the earth.
The sun is much larger than the earth; it looks smaller because of its distance from the earth.	Materials: rubber balls of the same size and color Have two children each hold a ball side by side. Let the rest of the class observe that the balls are the same size. Have one of the children holding a ball move backward several feet, and ask the class to tell if the balls look the same size. Have them observe a large ball from close up and then from a distance. Relate this to size of the sun.

Extension:

Place a baseball several feet away from the child. Have him hold a penny near his eye. Does the penny look big? Why? Because it is closer to you.

Concepts

The sun is very hot.

Experiences

Discuss the sun's effects on the skins of people lying on a beach. (tanning or perhaps burning) Let them bring pictures for the bulletin board.

Materials: two dishes, black paper, two ice cubes

Get two dishes, put black paper in each. Put an ice cube on each dish. Place one dish in the sunlight. Place the other dish out of the sunlight. What happens? Which ice cube melts first?

Extension:

Materials: electric heater

The sun is hot, but it is not burning. It glows much the same way that wires glow in an electric heater. There are heat and light in the glow of the heater. The glow of the sun is greater than the glow from any heater on earth.

Materials: two glass jars, water, two thermometers

Fill two different glass jars with tap water. Place a thermometer in each jar. Record the temperature. Place one jar in the sun, the other in the shade. Read the thermometers at regular intervals. Record the temperatures.

Extension:

Repeat the above activity, but this time have them use different jars--containers with wide openings. Compare differences, if any, in temperatures.

The sun shines all the time.

Materials: flashlight, construction paper labeled clouds

Shine a flashlight at the children and then place the construction paper between the light and the children, just like a cloud comes between the sun and the earth. Show them that the light still shines but the construction paper (clouds) block it out while only some light gets through.

Make a chart showing rain, clouds, and the sun shining above the rain cloud.

Extension:

Discuss times when the children may have had the experience of taking off in an airplane on a cloudy day and flying above the clouds into sunlight.

Concepts

An opaque object blocks the sun's light and casts a shadow.

Experiences

Materials: large pieces of heavy cardboard, flashlight, if there is no sunshine in the room.

Hold a piece of cardboard in the path of the sunlight. Ask the class to look at the shadow, and to think about why shadows are made. Choose volunteers to make shadows by holding the cardboard in the path of the sunlight. Encourage other members of the class to make suggestions, guiding the child with the cardboard and helping him find the place where the cardboard will cast a shadow. The need for sunlight will become apparent.

Extension:

Make a shadow portrait for an Open House or other school exhibit. Use a slide projector or other source of strong light to cast each child's shadow on a sheet of paper fastened to the wall. While one child is being silhouetted, let a second child use colored chalk to outline the shadow. Then let children cut out their own shadow pictures for use in a class frieze on a background that contrasts with the silhouettes.

Let children try to make shadows in sunlight with various transparent, translucent, and opaque materials. Use cellophane, glass, water in a glass, pieces of wood and metal.

Materials: sheet, light

Hang a sheet from a line extending across the room. Shine a light on the sheet from the side of the sheet opposite the class. Have several children pantomime "Shadow pictures" by standing behind the sheet in front of the light.

Materials: flashlight

With the sun as a source of light, the length and direction of shadows change during the daytime.

Use a flashlight that throws a wide beam to demonstrate changing shadows. Using a child to cast a shadow, hold the light low on one side, directly overhead and then low on the other side.

Extension:

Make a shadow stick by putting a yardstick, broom handle, or dowel rod into the ground where there is sunlight all day. Have the class look at the shadow every hour to see how the shadow changes.

Visit a park or garden to see a sundial on a sunny day. Help children to understand how a shadow shows the hour.

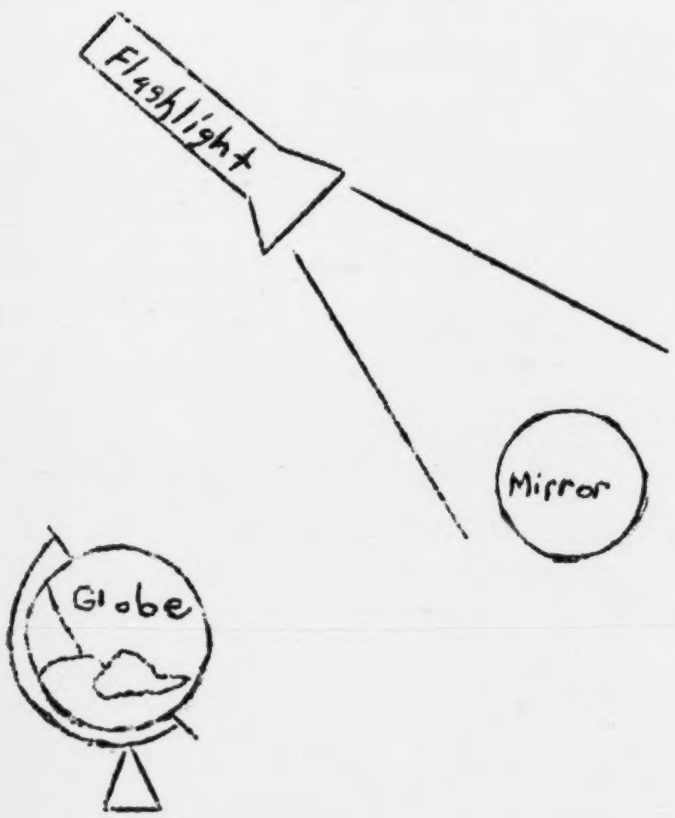
Concepts	Experiences
The moon is smaller than the earth or sun.	About fifty balls the size of the moon could be put inside a ball the size of the earth. Thus, compare a marble (the moon) with a baseball (the earth) with a basketball (the sun). Extension: Make a mobile using baseball, basketball, marble representing the sun, moon and earth. Materials: globe, wagon
The moon revolves around the earth.	

The moon shines by reflected light.

Put the globe (representing the earth) in the center of the room. Make a circle on the floor. Put a wagon on the line. The wagon is the moon, and the line on the floor is the path the moon takes. Have one child sit in the wagon and another child pull him around on the line. Let several children try this. This is the same thing that would happen if you were riding on the moon looking toward the earth. The moon makes one turn as it travels around the earth.

Materials: flashlight, globe, mirror

Develop the idea that a light (the sun) is shining on a mirror (the moon) and that this light reaches the globe (the earth).
Place the globe on a table. Have one child shine the light onto the mirror, which is held by a second child. Have the class tell the second child which way to move the paper so that light reflects onto the globe.



Extension:

Materials: mirror, globe

Where direct sunlight is available, let several children take turns using a mirror to reflect light from the sun onto various surfaces--walls, ceiling and the globe.

Materials: shoe box, ball, flashlight

Make a hole in one side of a box and at one end. Place the ball in the box and put on the lid of the box. Shine a light through the hole in the side of the box. Have a child look through the hole in the end. The ball can be seen by reflected light.

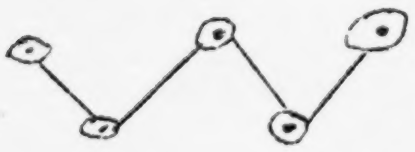
Concept

There are countless stars in the heavens.

Experience

Ask the children to go outside at night and attempt to count the stars in the sky. Children will report various numbers of stars they counted. They will agree that they were unable to count them all.

Stars shine during the day as well as at night, but we don't see them.



Concept

Stars do not twinkle and they do not have real points as we picture them.

Extension:

Materials: Construction paper, glue

Have the children make "viewing tubes" from construction paper and count the number of stars which can be seen with the naked eye within the area of the sky visible through the tube. Have them bring the number to class. Compute the average number of stars that can be seen within a given area. (Make sure the viewing tubes are all the same size.)

Materials: flashlight

Darken the room or have the child go into a dark closet. Turn the flashlight on and off. The children will notice that the light seems quite bright. Next, have the students pull the shades up in the room (or turn the light on in the closet) and the flashlight on and off. They cannot see the bright light against the bright light of the sky or closet. Thus, they see it makes very little difference if the light is off or on. The light gives the same light in a dark or light room but it does not appear as bright.

Extension:

Have the children make "stars" by a shining flashlight beams through the backs of boxes with small holes punched into them. Observe the stars in a darkened room and in a room filled with sunlight.

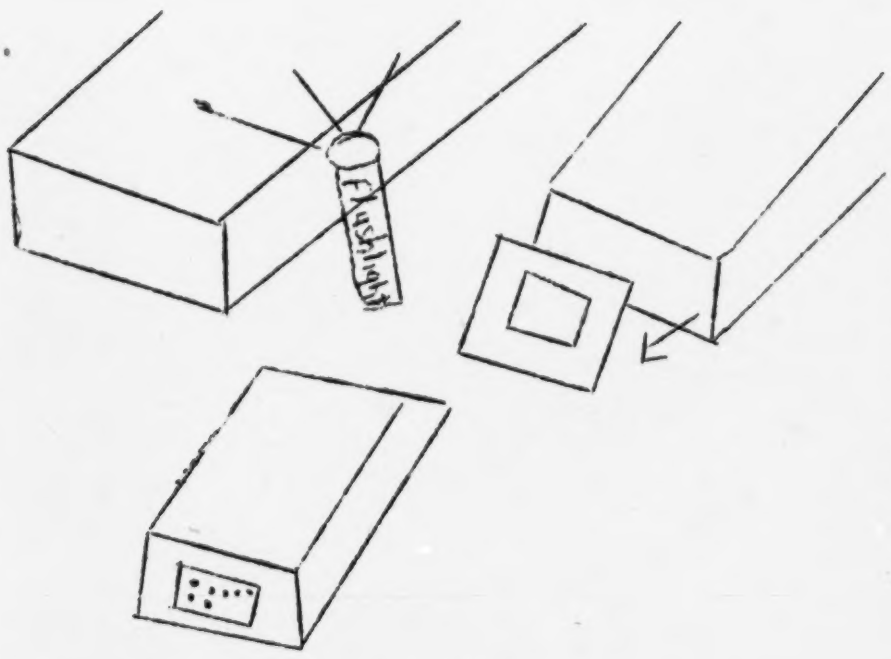
Experiences

Materials: flashlight, cardboard box

Punch a hole in each box with a pencil. At opposite end insert flashlight. Go to darkened room--as large a room as possible. Place group with lighted boxes at one end--observers at other. Have the children with boxes move slowly to center of room, moving boxes from side to side; have other group also advance toward center of

Some stars seem to form groups which we call constellations.

Cassiopeia



Concept

Planets have no light of their own.

room. Children will observe that spots at a distance appear to twinkle and have points but that spots appear round as we approach them closely.

Materials: blue construction paper, gummed stars

Make posters of the more easily recognized constellations, such as Big Dipper, Little Dipper, Orion, Cassiopeia. Display these. Prepare labels. Play games in which pupils pin labels beneath corresponding constellations.

Materials: tinker toy set

Have pupils make models of various constellations. This will help the child to become more familiar with constellations. (Refer to the worksheets in the appendix.)

Extension:

Materials: flashlight, box, glue, black paper

Make a star box. Cut a hole in the bottom of the box, just large enough for a flashlight to go through. Draw an eight-inch square on the lid of the box. The center of the lid should be the center of the square. Cut out the square. Cut several sheets of black paper the size of the lid. Punch holes to show the positions of the stars in one constellation. Pin the paper to the box. Hold the flashlight in the bottom and observe the constellation.

Experiences

Materials: flashlight, colored reflectors

Darken the room; can any light be seen from the reflectors? Shine the flashlight on the reflector. There will be light from the reflectors. Turn the flashlight off. There will be no

light. Explain to the children that the sun is like the flashlight shining all the time. The earth and other planets reflect the sun's light, like the reflectors did.

The sun with the planets moving around it is called the Solar System.

Use a mobile to illustrate solar system. Use styrofoam balls or beach balls to represent the planets and the sun. This teaches in full through dimension. Students can walk around it, under it, and quickly grasp its meaning. (Refer to the worksheet in the appendix.)

Extension:

A picture showing the position of the sun and the nine planets should be available on the bulletin board or the teacher can devise a bulletin board display. Explain that the sun is the center of the solar system.

POEMS

The Fun of Outer Space

Come, I'll have you a race
Far, far out into space;
We'll zoom through the air
Into atmosphere rare,
Then we'll swing on some stars--
See the wonders of Mars.

And we'll croon a gay tune
With the man in the moon,
But come home without fail
On some meteor's rail.

Adah Miner

The Falling Star

I saw a star slide down the sky,
Blinding the north as it went by,
Too lovely to be bought or sold,
Too burning and too quick to hold,
Good only to make wishes on
And then forever to be gone.

Sara Teasdale

Go Fly a Saucer

I've seen one flying saucer. Only when
It flew across our sight in 1910
We little thought about the little men.

But let's suppose the little men were there
To cozy such a disk through foreign air:
Connecticut was dark, but didn't scare.

I wonder what they thought of us, and why
They chose the lesser part of Halley's sky,
And went away and let the years go by.

Without return? Or did they not get back
To Mars or Venus through the cosmic flack?
At least they vanished, every spaceman Jack.

I see the moon, the moon sees me,
The moon sees somebody I want to see.

VI APPENDIX

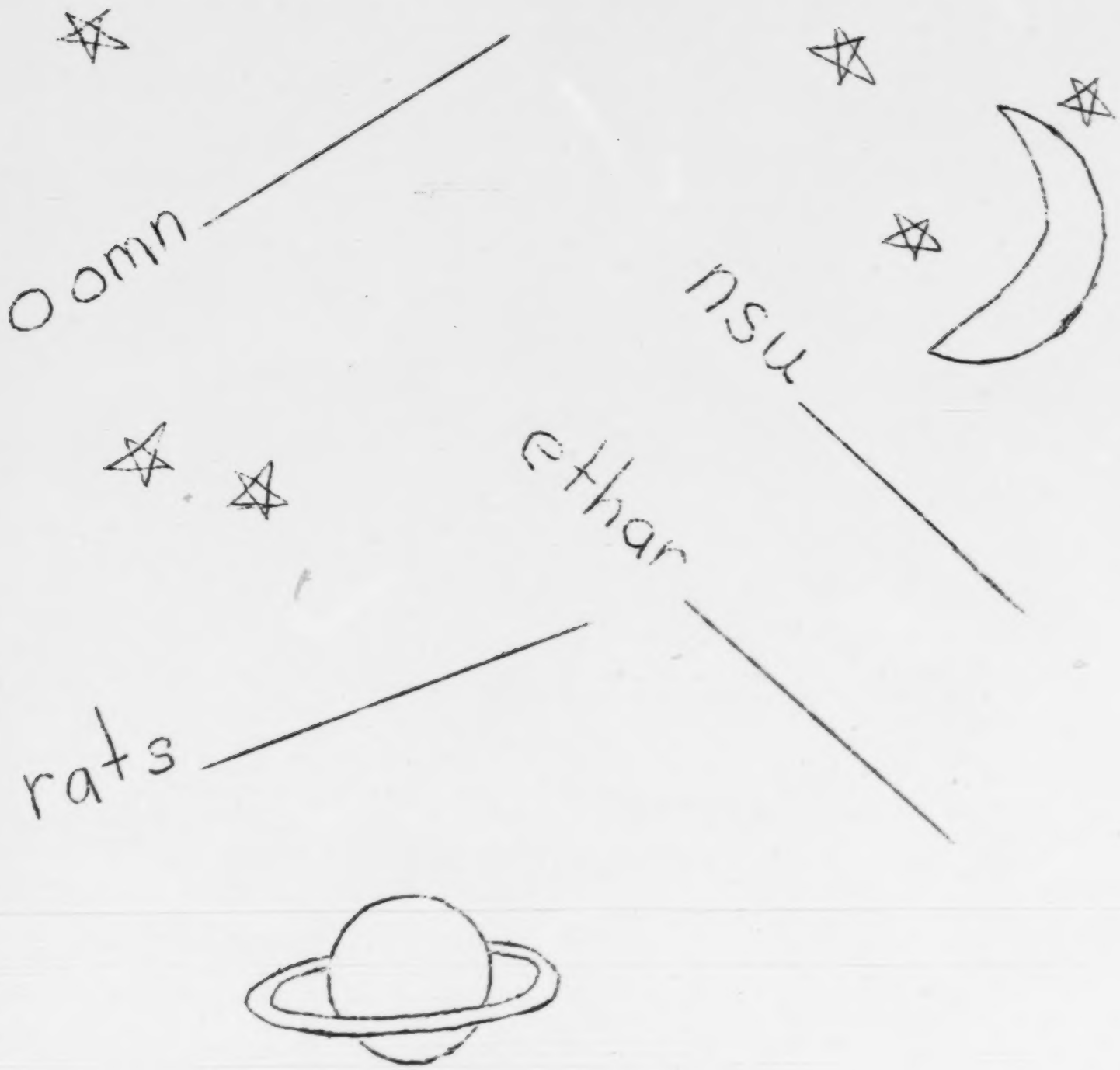
Worksheet Ideas

Which side has night?
Color it black.

Which get their light from the sun?
Draw a ring around them.

Which is nearest to the earth?
Write I before it.

A Space Special



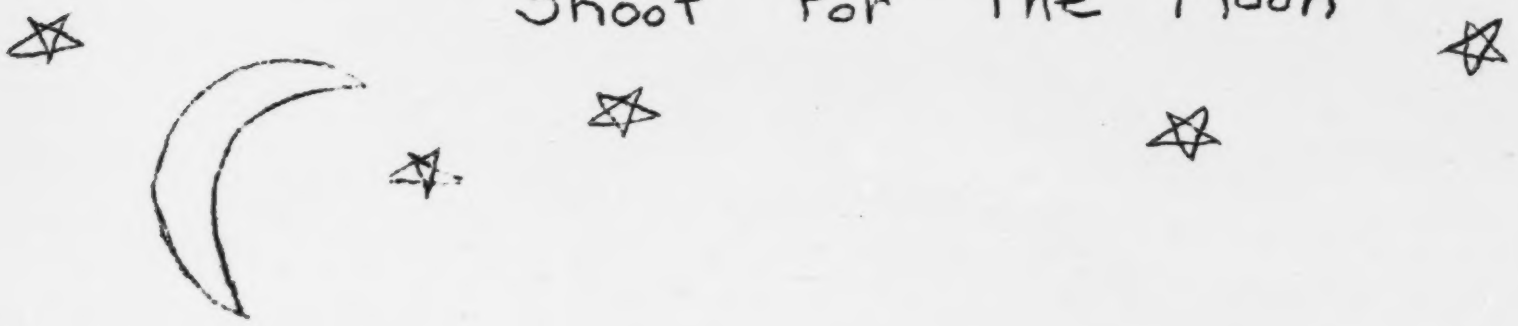
Unscramble each of these words to make a space word that you know.

Name _____

Date _____

Bulletin Board

Shoot For The Moon



→ etc.

Each child has a rocket with his name on it. Every time he does a worksheet correctly he moves his rocket to the next line. The child who reaches the moon first gets a silver rocket (made of tin foil)

Cut around each planet, one at a time. You may color the planets before you cut. Paste each planet on its own orbit, then write the name beside the planet. Be sure to throw the scraps away.

Earth

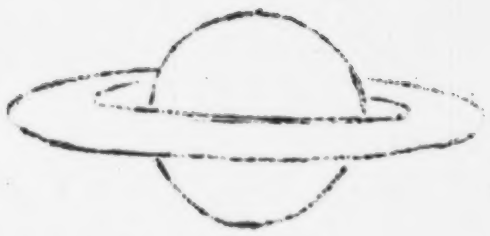
Mercury

Venus

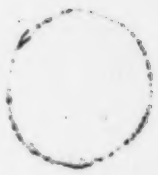
Sun

Mars

Jupiter



Saturn



Uranus

Neptune

Pluto

Name _____

The Stars

North Star

Color the Little Dipper blue.
Color the Big Dipper red.

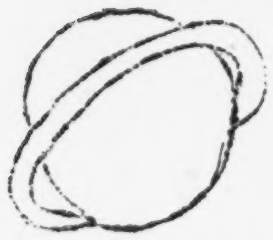
Name _____

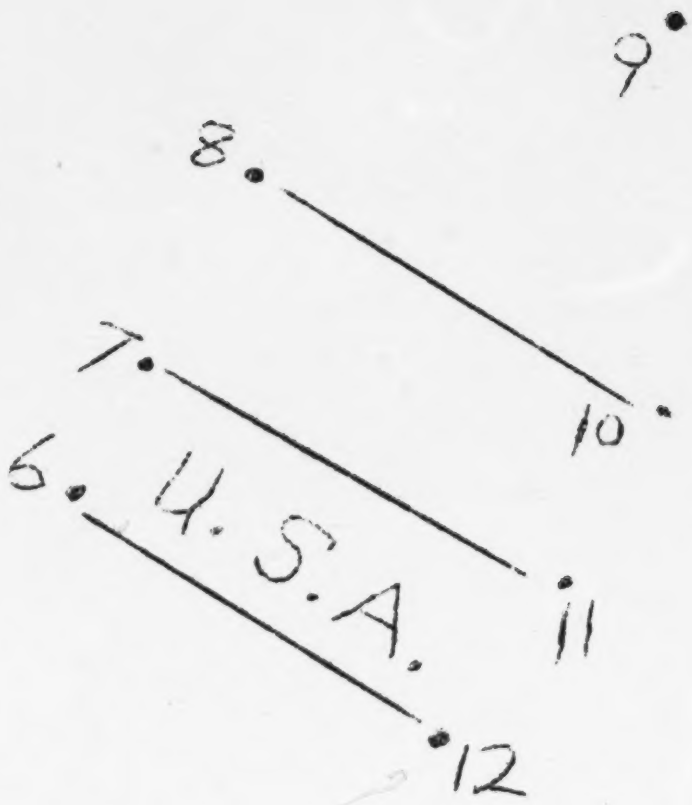
Can you draw the Little Bear around the stars?

Find the Big Dipper. Can you draw The Great Bear around the stars?

ORION

Can you find the three bright stars in Orion's belt? Now draw Orion

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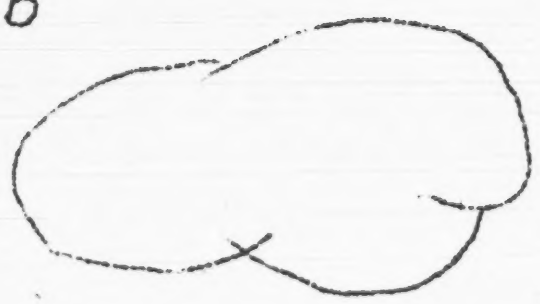

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FILMSTRIPS

The Earth and the Sun	3 - 5 - B2
What Is In the Sky?	3 - 3 - A8
Our Earth	3 - 2 - E2
The Moon	3 - 2 - E3
The Sun	3 - 2 - E4

PLANTS

I TITLE - PLANTS

II BACKGROUND

Children are curious about leaves, seeds, and seed pods. They like to make gardens and to watch plants growing in pots on the window sill. Plants are living things that children can care for, enjoy and understand.

In this unit the children will be growing plants, and watching their development. Through their experiments they will discover some of the basic patterns found among all living things.

III CONCEPTS TO BE DEVELOPED

A. There are many different kinds of plants.
B. Most plants have roots, stems, and leaves.
C. Plants can reproduce their own kind through seeds.
D. Seeds contain a tiny new plant.
E. Water is needed for seeds to germinate.
F. Seeds germinate at different rates.
G. Plants can reproduce their own kind through bulbs.
H. Plants can reproduce their own kind through parts of the old plant.
I. Growing plants need water.
J. Growing plants need light.
K. Growing plants need air.
L. Seeds are scattered in a variety of ways.

IV MOTIVATION

Choose some children to bring a bunch of radishes and a package of radish seeds. Have the children examine the radishes and the seeds. A small hand lens could be used to view the tiny seeds. Then ask the following questions:

How do you think the seeds became radishes?
What happened first?
What happened next?

Let the children share their ideas with the class.

V ACTIVITIES

Concepts	Experiences
There are many different kinds of plants.	Take a field trip to a nearby park or similar area. The children will discover the wide variety of plants around them.

Most plants have roots, stems, and leaves.

Extension:

Have the children observe as many growing plants as possible. Have them note the leaf arrangements and designs, their shapes, sizes, environments. Then have them draw sketches which illustrate their observations.

Materials: dandelion plant, knife, magnifying glass

Have the children find a dandelion plant, dig around it with a garden knife, and lift it, with its roots, from the soil. Have them examine its long root. Let them look closely at the root hairs with a magnifying glass.

Extension:

Materials: different kinds of leaves

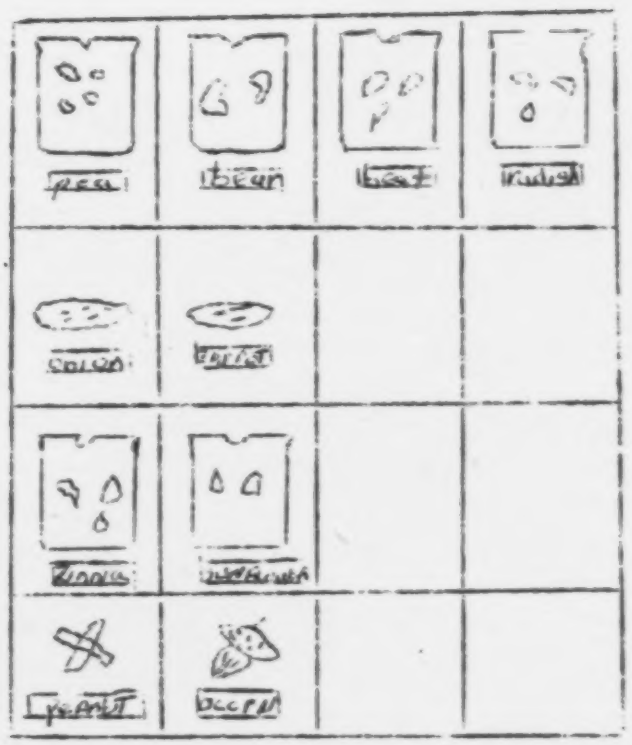
Let the children collect different kinds of leaves and discuss their similarities and differences. They may press the leaves between books and keep them for observation.

Materials: celery stalk, colored water, glass

Cut off the ends of a stalk of celery. Place the stems in cold water for about an hour. Then mix some red ink with the water. Let them stand for several hours. The children will observe how the ink moves up the stems into the leaves. Through this activity the children will see that the stems connect the roots and leaves, and provide the nutrients.

Take the class to a weed patch near the school. Ask them to find a small plant. Let them dig it up and carry it back to the classroom. Place it in a glass of water. Let the children examine it and discover that a plant has roots, stem, and leaves.

Plants can reproduce their own kind through seeds.



Extension:

Materials: commercial packets of bean, radish, lettuce, carrot, and beet seeds

Let the children handle the sealed packets of seeds to become familiar with the pictures of the vegetables and their names. Write the names on the board. Encourage the children to tell about eating the various vegetables. Then tear open a corner of each packet, and let the children examine a few of each of the different seeds. Children should begin to realize that from each kind of seed comes a different plant.

Extension:

Materials: a large shallow cardboard box with a lid, small envelopes of uncolored cellophane, seeds of various kinds, narrow gummed labels, scotch tape

Let the children make a seed collection. Rule the bottom of a box into sections large enough to hold an envelope and a gummed label. Put a different kind of seed in each envelope. With scotch tape fasten each envelope in one of the squares and put a label below it. On the label write the name of the seed in the envelope. If any of the seeds, such as nuts, for example, are too large for the envelopes, fasten them directly to the bottom of the box. The lids of the boxes will keep your collection clean. Capsules of the kind you buy at the drugstore may be used for small seeds instead of transparent envelopes.

Extension:

Materials: different kinds of fruit

Bring different kinds of fruit to class and open them to take out the seeds. Compare the sizes of the fruits and the sizes and general appearance of the seeds. For example, make sure the children notice that the apple, which is a fruit, has small seeds, while a plum,

which is a small fruit, has one large seed. Help the children make a display of different fruits and their seeds.

Seeds contain a tiny new plant.

Materials: lima beans, magnifying glass

Soak dried lima beans overnight. Give one to a group of three or four to split open. You may need to demonstrate to prevent damage to the seed. Help the children to find the beginning of a new plant and food for the new plant. Allow time for each child to use a magnifying glass to examine the "baby" plant and its first source of food.

Water is needed for seeds to germinate.

Materials: dry lima beans, lima beans that have been soaked overnight

Let everyone see and feel the difference between the wet and dry beans. Demonstrate the removal of the tough outer coat of one seed that has been soaked. Let several children try to do the same with a dry seed. They will discover that they cannot peel the hard seed coats from the dry beans. Through discussion and examination of soaked and dry seeds, guide the class to these understandings:

> Dry lima beans do not sprout.
> Lima beans sprout when they get water.

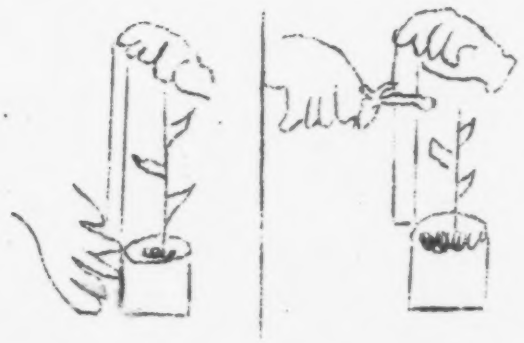
Extension:

Materials: dry lima beans, soaked lima beans, two shallow dishes, dry paper towels, wet paper towel

Fold two wet paper towels and place them at the bottom of a shallow dish. On the wet paper towels, place twelve or more well-soaked beans. Keep the towels moist and watch the beans sprout. On the dry paper towels place the dry beans. The children will observe that the dry beans will not sprout, because they have no water.

Seeds germinate at different rates.

A Weekly Review of Plant Growth								
Plant	1	2	3	4	5	6	7	8
Delphinium								
Carrot								
Lettuce								
Marigold								
Sweet Pea								
Sunflower								



Extension:

Materials: lima bean seedlings, three shallow dishes, water paper towels

Divide the seedlings into three equal groups. Keep one group soaking wet at all times, keep the second group only slightly damp, and let the third group remain dry. In all other respects the three groups should be treated alike. The children will discover through observation that too much water may cause decay and mold.

Materials: seeds, soil, wooden flats from a florist shop or clay pots

Have the children bring in the above items. Plan to have types of seeds that differ in size and in length of time to germinate. Carrot and lettuce seeds illustrate slow and fast germinating qualities; there are differences, too, among the marigold, delphinium, sweet pea, and sunflower.
Let the children plant the various seeds. They should all be planted in the same way and all given the same amount of water and sunlight. Then have the children observe the growth and record their findings on a chart like the one illustrated.

Extension:

The children might enjoy measuring and recording the growth of the plants used in the above experiment. The day-to-day record will not show much difference, but a comparison of several days growth will. Have a child hold a strip of paper or a ribbon next to the plant. Cut the strip at the same height as the top of the plant. Each day a new strip can be cut. A different color may be used for each type of plant. The strips can be used to make a bar graph. The day the measurements are taken should be recorded. In a few days the different kinds of plants will begin to show a difference in rate of growth.

Plants can reproduce their own kind through bulbs

Materials: package of onion seeds, bag of onions

Bring a bag of onions and a package of onion seeds. Show the children the seeds and ask:

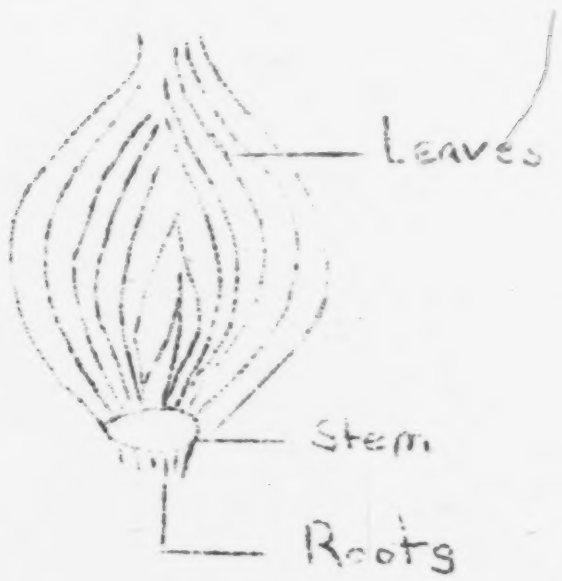
> How can I make the seeds grow into an onion plant?

The children should be able to tell you that the seeds must be planted in soil and receive water and sunlight. Then show the children the bag of onions, and tell them there is another way of getting onion plants to grow. Onion plants can grow from bulbs. The children are familiar with the onion as a vegetable, but they do not know that onions grow in the same way as a tulip bulb.

Extension:

Materials: onion bulbs, wide mouth jars, water, stones

Two glass jars can be used. If several stones are placed on the bottom of the jar, the bulb can be set on them, and the children will be able to see the roots grow. Use two large firm onions that have not sent out shoots. Pour a little water into only one of the jars. The bulb in water will develop flower stalks. In a warm room the other bulb may also begin to grow. It uses the water stored in the leaves. Let the children record which bulb grows first. As the bulbs are allowed to grow, the children will observe that the bulb with added water has a different rate of growth than the one without added water.



Materials: an onion bulb cut in half

Cut an onion bulb in half and let the children try and find the leaves, roots, and stem of the onion bulb. Then let the children label the parts and display it on the science table.

Plants can reproduce their own kind through parts of the old plant.

Materials: geranium plant, glass jar, soil and water

Bring in a geranium plant. Cut a stem from the geranium. The stem should include a bud. Then place the cutting in a jar of water. The children will observe that the cutting in water develops roots. When a good root system develops, the cutting can be planted in soil. Have the children observe that the cutting develops into a plant like the one from which it comes.

Materials: white potato, glass dish with water

Bring a white potato to class. Have the children find the buds. Cut the potato in half. Place one of the halves in a dish with water. Have the children observe them for several days as the buds develop into plants.

Extension:

Materials: pussy willow branches, vase, water

In early spring, obtain a few pussy-willow branches. Trim the cut ends under water, and then dip each branch in lukewarm water to loosen the waxy coating. Put the branches in water-filled vases, and keep them in water until roots are well developed. The new pussy willows can then be planted in soil.

Extension:

Let the children experiment with other plants such as ivy, rose bushes, sweet potatoes.

Give all the children an opportunity to grow their own plants from the different cuttings.

Growing plants need water.

Materials: potted plants that are alike, water

Get two plants that are alike. Have the

children water one plant and not the other plant. It will take several days before the children will notice the results. Let them compare the color and general appearance of the two plants. The children should conclude that plants need water to grow.

Growing plants need light.

Materials: cardboard box, potted plants that are alike, water

You can use any two plants that are the same size. If you have a dark closet that does not admit light, the plants can be put in there. Otherwise use a covered box, wastebasket, or anything that can exclude light. Both plants should have the same amount of water before starting the experiment. Then put one of the plants in sunlight, the other in the dark. Let the children keep a record of their observations each day.

The plant in the light will stay green and healthy looking. The one in the dark will grow spindling and turn yellow, and if left long enough, it would die. They should conclude that light is necessary for plants to grow.

Growing plants need air.

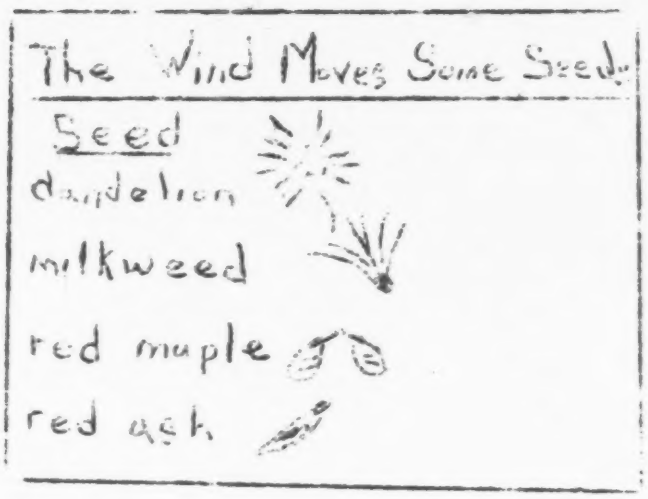
Materials: seedlings with roots and leaves, plastic bag, string, paper towels

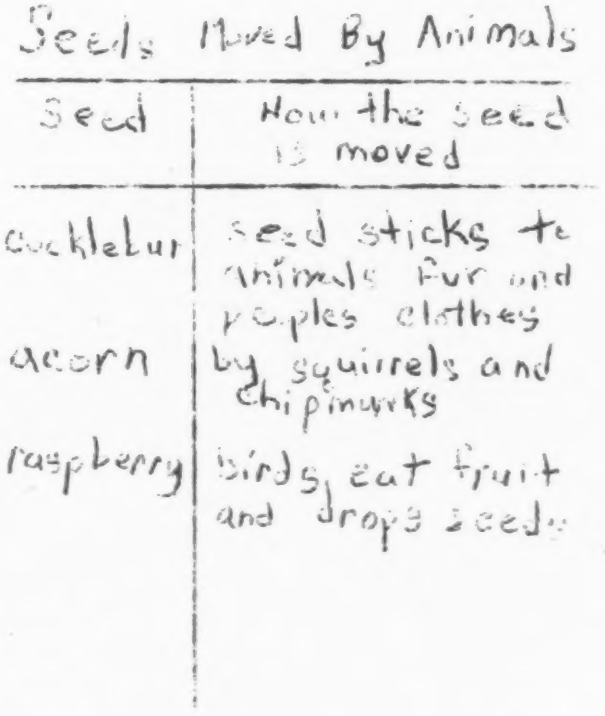
Place some seedlings, which have developed roots and leaves, on a wet paper towel. Then put the seedlings and wet paper towel into a plastic bag to keep the air out. Let the children observe what happens to the seedlings. They will discover that a plant must have air to live, or it will die.

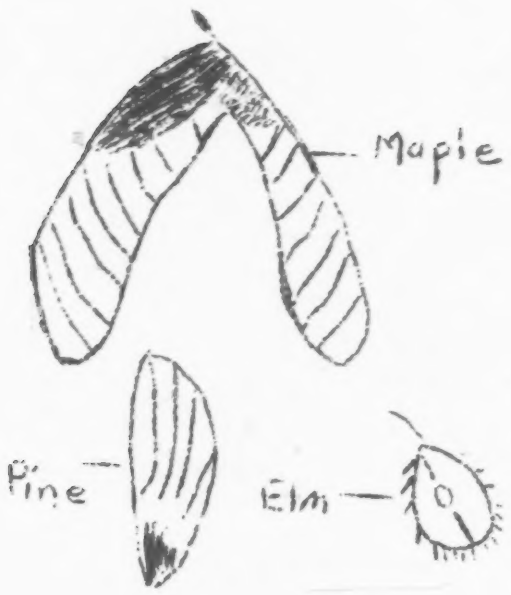
Seeds are scattered in a variety of ways.

Take the children on a field trip to discover plants growing in many kinds of places. Call attention to seeds and grasses in vacant lots, between rocks and cracks in pavement, and in other areas where obviously no one took the trouble to plant them. Lead the children to wonder:

> Why do so many kinds of plants grow in so many places?







Extension:

Materials: dandelion seed head

Collect several intact dandelion seed heads. Pull out the "parachutes" and let the children examine them through a magnifying glass to discover why the wind can carry these seeds so easily. After discussing and looking for seeds that float in the air, like the dandelion and milkweed seeds, the children might enjoy making a chart similar to the one shown.

Materials: cockleburs

Have the children bring in some burrs. Let them examine the barbs on the burrs. The children will discover how easily these seeds are carried by men and animals when the barbs stick in the clothing and fur. The children might enjoy making a chart like the one illustrated.

Materials: collection of seeds with wings, a windy day, an old sheet

Divide the seeds into two equal piles. Put the same number of each seed in each pile. Count the seeds. Tear off the wings of all the seeds in one pile. Wait for a windy day. Spread the sheet on the ground in front of a porch or some steps at least six feet high. Drop the seeds from the porch onto the sheet. Count the number of seeds with wings on the sheet. Count the number of seeds without wings on the sheet. How many seeds with wings went farther than the sheet? How many seeds without wings went farther than the sheet? Plan a graph to show the results.

Materials: one long-haired dog, one coffee can

Have the children put all the burrs they pull from their dog's hair into the can. Have them count the number of burrs at the end of a week. Do this for several weeks in the late summer or fall. Then let them make a graph showing the number of burrs found each week.

Worksheet Ideas

VI APPENDIX

Can you find these parts?

	Yes	No
Seeds		
Flower		
Leaf		
Stem		
Root		

Where did your seed start to grow?
Show the place.

Look at your seed each day.
Show what you see

Day 1

Day 2

Day 3

Day 4

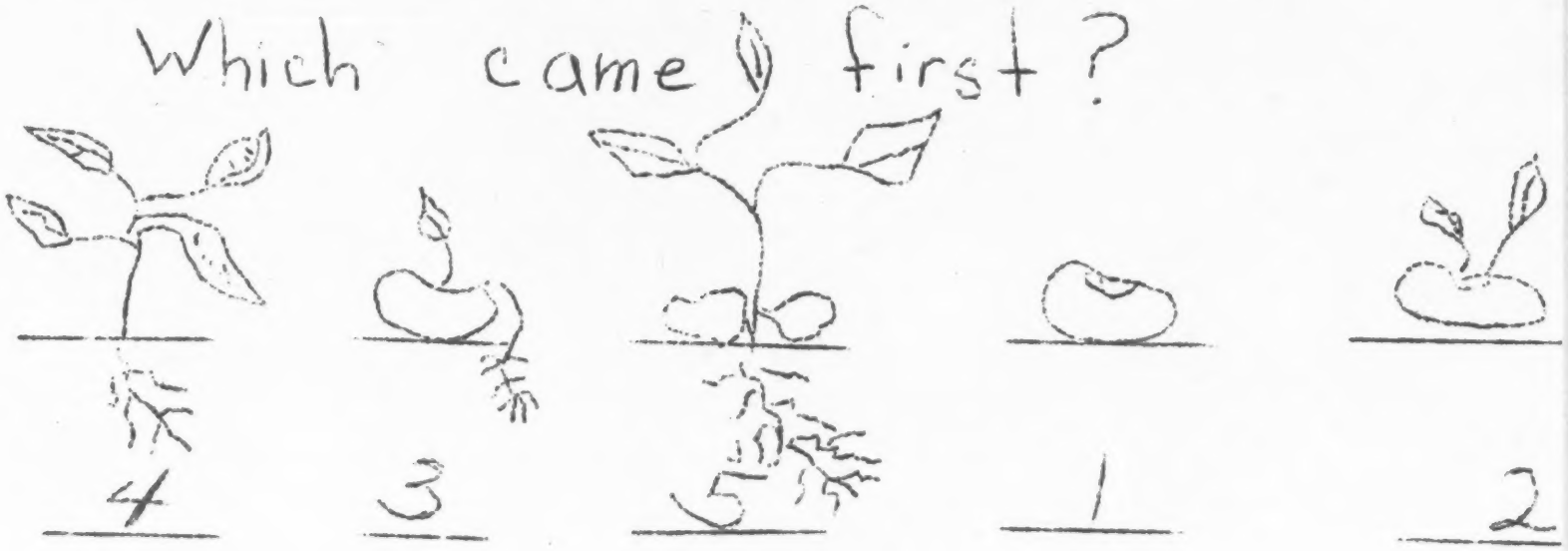
Day 7

Day 8

(Each day, the children examine the seeds. The observations are recorded on the bean outlines.)

Worksheet Ideas

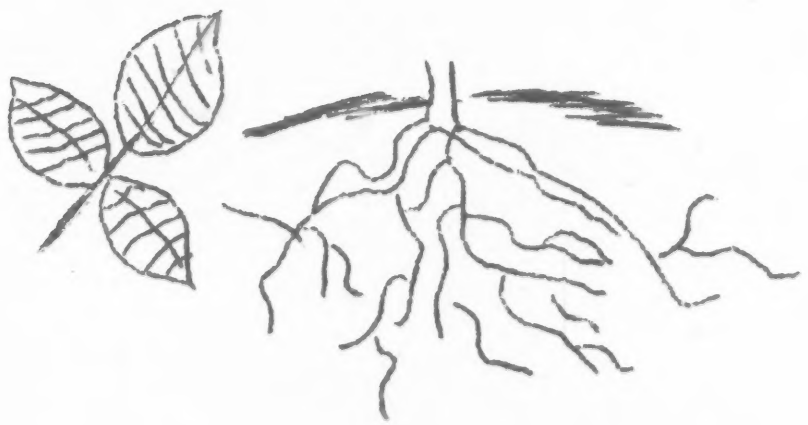
Which came first?



4 3 5 1 2

Which seeds can be carried to a different place by the wind?

What is the part of the plant that is in the soil?



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Filmstrips

Plants	3 - 5 - A5
Plants and Seeds	3 - 5 - A6
Plants Grow and Change	3 - 4 - E6

CHANGES AROUND YOU

I TITLE - CHANGES AROUND YOU

II BACKGROUND

By the time children have entered first grade, they have had numerous experiences with variations in the weather. and seasonal changes. We will gather these experiences and give them meaning. The unit begins with weather changes, then the properties of air related to weather are presented: evaporation and condensation; changes in the state of matter.

III CONCEPTS TO BE DEVELOPED

A. Different kinds of weather occur at different times of the year.
B. Weather charts represent a very early attempt at recording data.
C. A thermometer is used to measure temperature.
D. Matter can be a liquid, solid, or a gas.
E. Solids are a form of matter.
F. Liquids are a form of matter.
G. Gases are a form of matter.
H. Heat can be used to change a solid to a liquid.
I. The loss of heat causes a liquid to change to a solid.
J. When liquids evaporate gases are formed.
K. Heat causes water to evaporate more rapidly.
L. Moving air causes water to evaporate more rapidly.
M. Cooling the air causes water vapor to condense into drops of water.
N. Clouds and precipitation result from the cycle of evaporation and condensation.

IV PHASE I - WEATHER AND TEMPERATURE

MOTIVATION

If old magazines are available in the classroom, children may be encouraged to search in them for seasonal pictures. Pupils can share the pictures with the class, and then use them for a bulletin board display.

ACTIVITIES

Concepts	Experiences
Different kinds of weather occur at different times of the year.	Materials: chalkboard, chalk On the chalkboard write "A Cloudy Day," "A Rainy Day," "A Snowy Day," "A Sunny Day." Have each child select one type of day that he would like to

illustrate. Have each child describe what he has drawn. Have the children tell how the pictures differ.

Extension:

Make a season's scrapbook. Perhaps it is now fall. Have the children collect pictures that suggest fall. Your fall collection should include pictures of colored leaves, acorns, back-to-school posters, a cornstalk, a pumpkin, and a football.

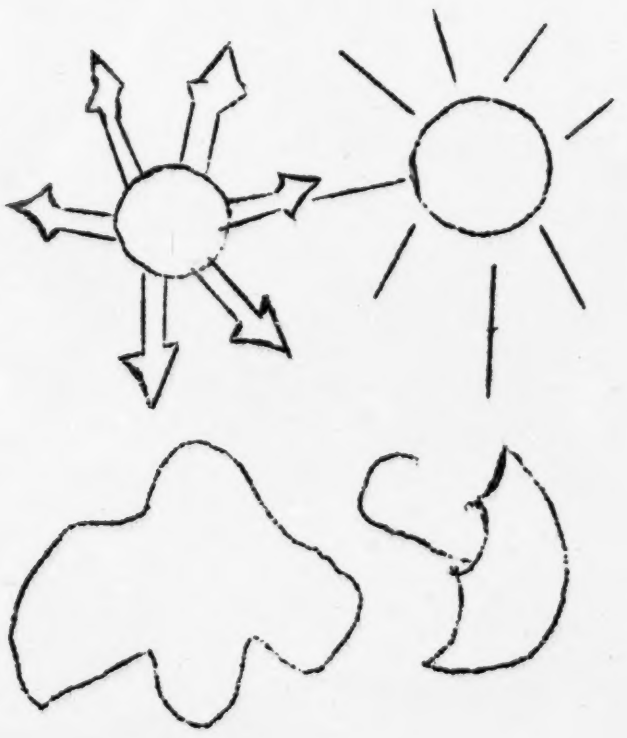
Be sure the book has separate chapters for winter, spring, and fall. (Refer to worksheets in the appendix.)

Extension:

Make seasonal dioramas. Have the children bring shoe boxes from home. Let them cut away one of the four sides of the box. Cut sheets of construction paper to fit the floor and the walls. On the paper which covers the floor and walls have the children draw the seasonal backgrounds. Then let them create a scene for each of the four seasons.

Materials: construction paper

Weather charts represent a very early attempt at recording data.



The symbols used on conventional weather charts are far too abstract for primary children, symbols suggestive to types of weather such as the ones shown here can be used. The cut-outs can be made from construction paper. Several should be prepared in advance so that each day the appropriate cut-out can be chosen by a "Weather Chairman" and placed on the chart.

Extension:

Write for a copy of a newspaper in a city far from your home. The city should be in another part of the country. Look for the weather forecast in this newspaper. Compare this forecast with a weather prediction published in the home town newspaper on the same date. (Refer to the appendix for bulletin board ideas.)

A thermometer is used to measure temperature.

Materials: thermometer, string

To acquaint children with the way a thermometer works, it is best to use a large outdoor thermometer, one in which the red liquid can be seen easily. Hang the thermometer in the room for a while, and tie a string at the top of the red line. Then put it outdoors, and again mark the top of the red line. Even though degrees won't mean anything to the children, let them read the numerals at the top of the line and note that the line moves up and down in response to temperature changes.

Extension:

Materials: thermometers

Let the children use thermometers to find the warmest spot in the room and the coolest spot.

Materials: two thermometers, soil in a jar, water in a jar

Let the children put some soil and some water in a sunny place. Put thermometers in the soil and water. Have the children watch the thermometers. Which warms up sooner, the soil or the water? Record keeping may be introduced here. Put two graphs, like the one at the side, one for water temperature and one for soil temperature. Let the children mark the changes in temperature. They will discover which material warmed up the fastest. (See appendix for work-sheets.)

Time		
10 AM	11 AM	12 AM
Temp. 90°		
85°		
80°		
75°		
70°		

V PHASE II - STATES OF MATTER

MOTIVATION

Set up a collection of solid and liquid things on a table. Then blindfold several children and have them identify objects by feeling them. Encourage them to describe the different kinds of matter using some of the following descriptive words: heavy, light, hard, soft, wet, dry. This should be a good motivating experience for the children.

ACTIVITIES

Concepts	Experiences
Matter can be a liquid, solid or a gas.	Materials: four examples of solids and liquids Place on a table at least four examples each of solids and liquids. Have the children arrange them by state of matter. Ask the children why you did not also place four examples of gases on the table. Indicate that gases are more difficult to secure than are solids and liquids, and are ordinarily invisible. (See appendix for worksheet.) Extension: Name items in the class; have students identify each as a solid, liquid, or a gas. Write each of the words solids, liquids, and gases on the top line of three separate sheets of large chart paper. Have the children find or draw pictures representing examples of each state of matter. Mount the charts on colored paper and put them on a bulletin board under the word Matter.
Solids are a form of matter	Extension: Set up a collection of solid things on a table and label them solids. Have the children dictate a definition of solids. Write it on a chart paper and attach it to the bulletin board. Bring out the fact that they all have a definite size and shape. Materials: the children's rock collection Capitalize on the children's interest in rocks by displaying a number of them. For each one displayed, ask these four questions: Does this rock have a shape of its own? Does this rock have a definite size? Did it have the same size yesterday? Would you expect it to have the same size tomorrow?

Emphasize that each sample has its own definite size and shape.

Liquids are a form of matter.

Materials: three or four containers of different shapes, water

Pour the same amount of water into each of the different shaped containers. Note how the shape of the water changes as it changes containers.

Extension:

Have the children dictate a definition of liquids. Write it on chart paper and attach it to the bulletin board.

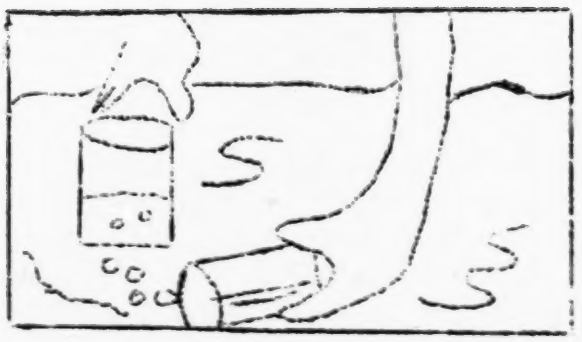
Gases are a form of matter.

Materials: balloon

Have a child blow a balloon up. Ask: What is in the balloon? (Air) Lead them to note that although we cannot see the air, we know it's in the balloon because of the shape of the balloon.

Extension:

Materials: two glasses, aquarium tank, water



To show that air takes up space, lower a drinking glass straight down into an aquarium tank. Then put another glass into the water in the same way. After lowering it below the first glass, tilt it slightly so that the bubbles will rise into the upper glass. Note how the additional air takes up more space.

Heat can be used to change a solid to a liquid.

Materials: several caramel candies, cookie sheet, hot plate

Distribute candies to the class. Hard caramel candy is suggested. After the children remove the candy wrapper, ask: How does your caramel feel? Is it hard or soft? The children should be able to say that the candy is a solid. Have the children tell what they think will happen if we heat the candy on the cookie sheet. After the candy starts heating, over a hot plate, all should watch to see how it changes.

You may ask: How did the candy change when it was heated? The children should have discovered that a solid was changed to a liquid because of the heat.

Extension:

Materials: one chocolate bar, sunlight

Place a chocolate bar in the direct sunlight. Have them observe, how on hot days, solids, such as chocolate candy, become liquids.

Extension:

Ask the children to bring in small amounts of materials that will melt (change from solid to liquid) when left in a warm place. Provide pans for the materials: butter, candle wax, shortening, gelatine. Such substances will melt over hot water, in warm sunshine, or on a warm radiator.

The loss of heat causes a liquid to change to a solid.

Materials: candles, evaporating dishes matches

Melt a piece of candle. Let the children note the changes that occur as the solid changes to a liquid. Then let the liquid wax cool and become a solid again. The children will discover that when the candle wax was cooled, it became a solid again.

Extension:

Materials: ice cube tray filled with warm water, refrigerator

Fill an ice cube tray with warm water. Let each child dip his fingers into the water to feel how warm it is. Then place the tray in a refrigerator freezing compartment. After several hours remove the tray from the refrigerator and let the children note the changes that occurred. Let them handle the ice cubes and tell how they feel. Help them to identify the ice as a solid.

When liquids evaporate gases are formed.

Materials: chalkboard, wet sponge, paper fan

Show the wet sponge to the class. Squeeze out a few drops to show that there is water in the sponge. Then choose a child to come forward and use the sponge to make a wet strip on the chalkboard. Ask the class what will happen to the wet spot. As the children watch the spot get smaller and disappear, make certain that they understand that this happens because the water is disappearing into an invisible gas.

Extension:

Relate changes of state of matter to such everyday activities as making ice cream, preparing gelatin, baking cookies and boiling water.

VI PHASE III EVAPORATION AND CONDENSATION

MOTIVATION

Materials: a sponge, water, and a glass

Use a wet sponge to squeeze ten drops of water into the glass. Let the class count the drops as they fall into the glass. Then ask the class what will happen to the water if the glass is left in the classroom overnight. Let them discuss their ideas with the class.

The following day check the water in the glass, by tipping the glass over and counting the drops that drip out. The children will observe that fewer drops are in the glass today. Why? - evaporation. Continue to check until the glass is completely dry.

ACTIVITIES

Concept	Experiences
Heat causes water to evaporate more rapidly.	Materials: two dishes, hot and cold water Wash a dish in cold water and let it stand for a few minutes. Wash another dish in hot water and let it stand for a few minutes. See which dish dries faster. The children will discover that the heat from the hot water caused the water to evaporate more quickly.

Extension:

Materials: two cloths, water

Have the children soak two cloths with water. Hang one of the cloths near an open, sunny window. Hang the other cloth where no direct sunlight can get to it. Have the children inspect the two cloths after about an hour to see whether one has dried more than the other.

Materials: two glass containers, hot plate, water

To show that heat causes water to evaporate more rapidly, place equal amounts of water in similar containers. Keep one at room temperature, the other on a hot plate for 15 minutes. Then allow the water to cool to room temperature. Measure the water in each container. From which has more water evaporated?

Moving air causes water to evaporate more rapidly.

Materials: 6" square pieces of waxed papers for each member of the class, colored water

Give each child his piece of waxed paper. Color some water slightly with food coloring and place one or two drops of this water on each square of paper. Have the children observe the evaporation process.

Repeat the above activity, but this time tell some of the children to spread the water drops with the end of a pencil. Have others hold the paper with their hands while they blow gently across the water drops. Point out that this is a way of speeding up evaporation.

Cooling the air causes water vapor to condense into drops of water.

Materials: mirror, spoon, a pair of glasses

Have the children breathe on an object that has a shiny surface, such as a mirror, a spoon or glasses. Point out how the surface looks dull where their breath strikes it. Then let them touch the surface and observe how the film

wipes off. Discuss what the film was and what caused it to form. The children should discover how the water vapor condensed into tiny drops of water.

Extension:

Materials: two glasses, ice cubes, water

Put water into the two glasses. Then put ice cubes into one of the glasses. The children will observe how water droplets form on the outside of the glass with the ice cubes in it. Make sure that the children understand that the tiny drops of water on the outside of the glass come from the air. The air always contains some moisture. Cold air cannot hold so much moisture as warm air can, so when the glass is cooled by the ice inside it, the air that touches the glass is cooled. It drops some of its moisture in tiny drops on the glass.

Clouds and precipitation result from the cycle of evaporation and condensation.

Extension:

Materials: transparent plastic container, grass turf

Make a water cycle inside a transparent plastic container. (An oblong two-quart ice cream container works well.) Place the lid upside down on a table, and inside the lid fit some well-watered pieces of grass turf. Move your "miniature greenhouse" to a sunny spot. Heat will cause the water inside the container to evaporate. Some of the water will condense to drops of water on the top and sides of the greenhouses and may fall as rain.

After much observation of the "greenhouse", the children may wish to record an explanation of what happens in their greenhouse. They may help you devise a chart like the following.

Water In A Greenhouse

We are growing grass in our greenhouse. Water goes into the air from the soil.

Water goes into the air from the grass plants.
The top and the sides of the greenhouse are something like a cloud.
It is often like rain in the greenhouse.
Water comes out of the air.
Water is used over and over again in the greenhouse.

Extension:

Have the children draw a large mural showing the water cycle. Include the sun as the source of heat causing evaporation.

Clouds and precipitation result from the cycle of evaporation and condensation.

Materials: two pans, water, hot plate, ice cubes

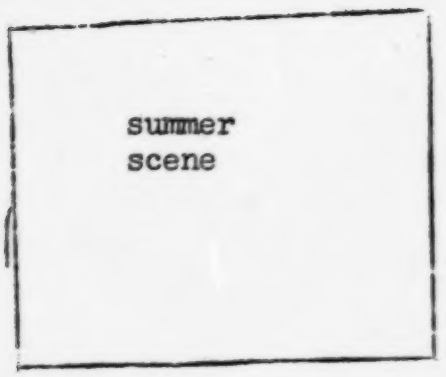
Refer to the worksheet in the appendix.

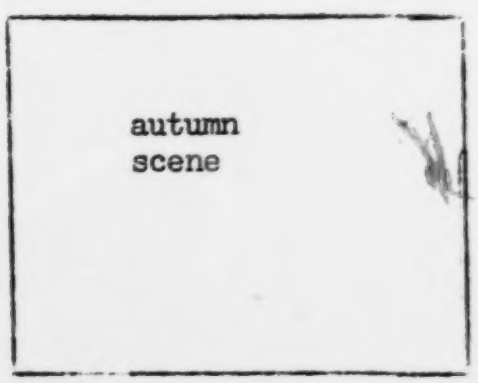
VII APPENDIX (See Worksheets on following pages)

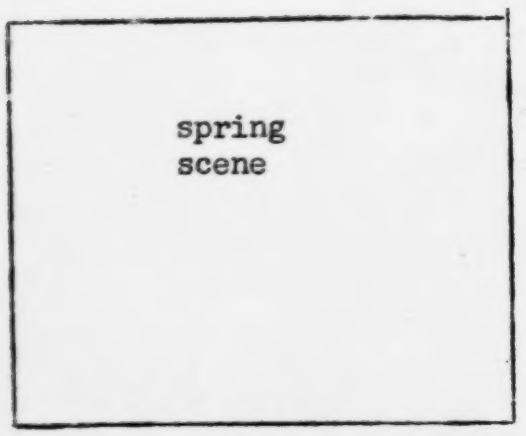
Worksheet Idea

Here are kinds of weather:

1. a hot sunny day
2. a windy cloudy autumn day
3. a cold snowy winter day
4. a warm sunny spring day

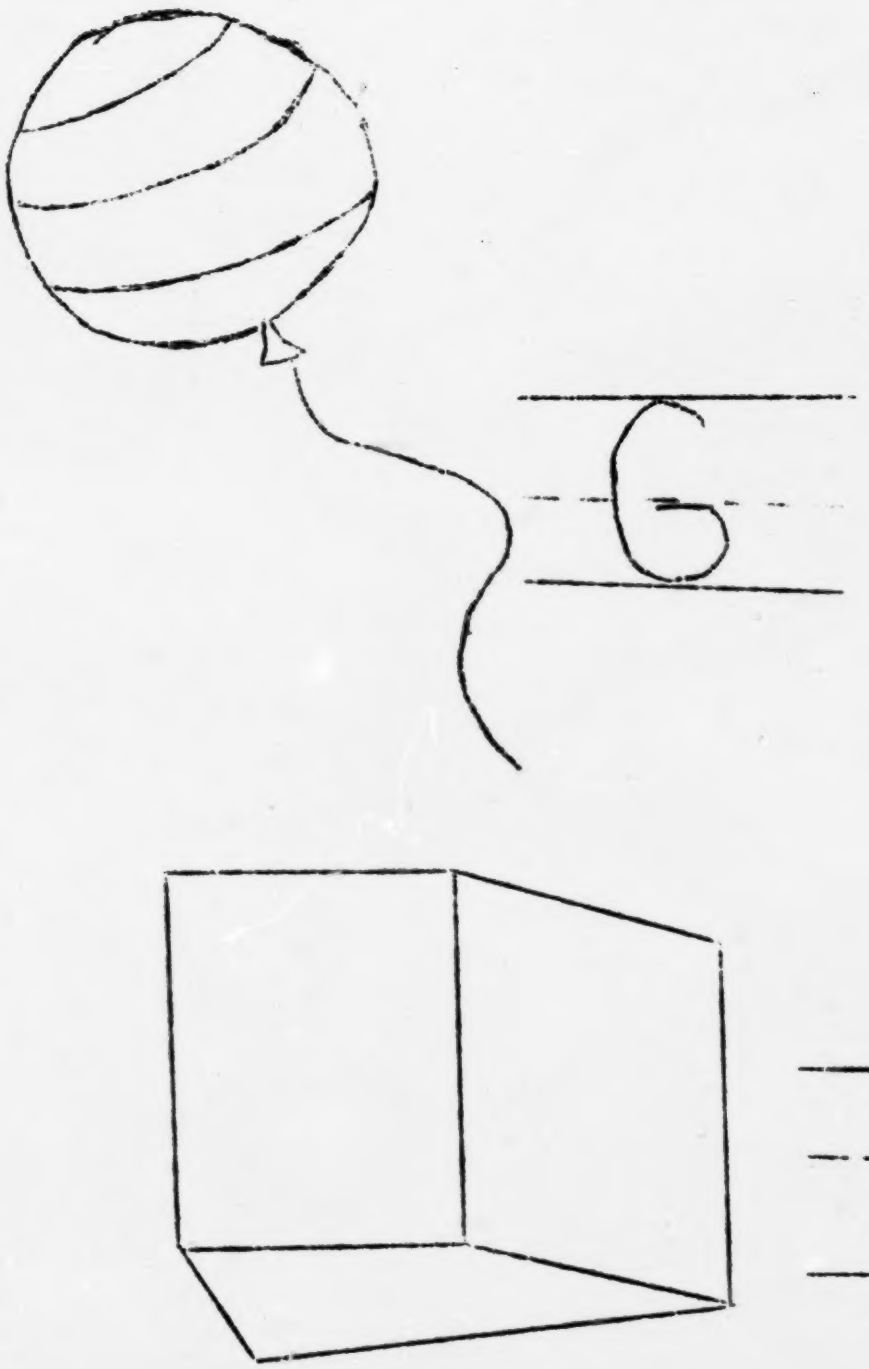






Find the chart for the weather.

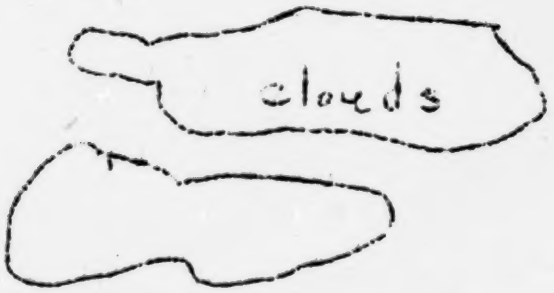
Worksheet Idea



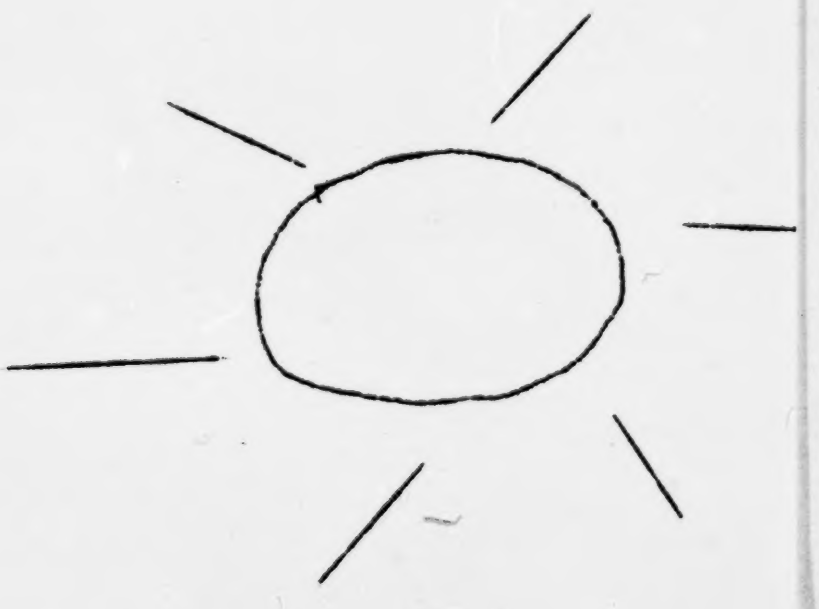
1. Which is a solid? Write S after it.
2. Which has gas in it? Write G after it.
3. Which has liquid in it? Write L after it.

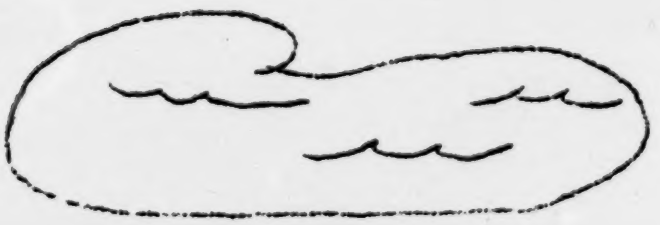
Worksheet Idea

Which dries faster?



Which will make the puddle go away faster?



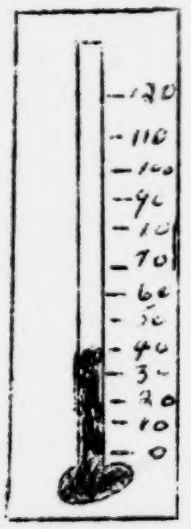


Worksheet Idea

Find the Temperature

Put your thermometer in the sunlight.

Color this thermometer.



(Let each child put his thermometer in the sunlight and color in the temperature that his thermometer records.)

Find the Temperature

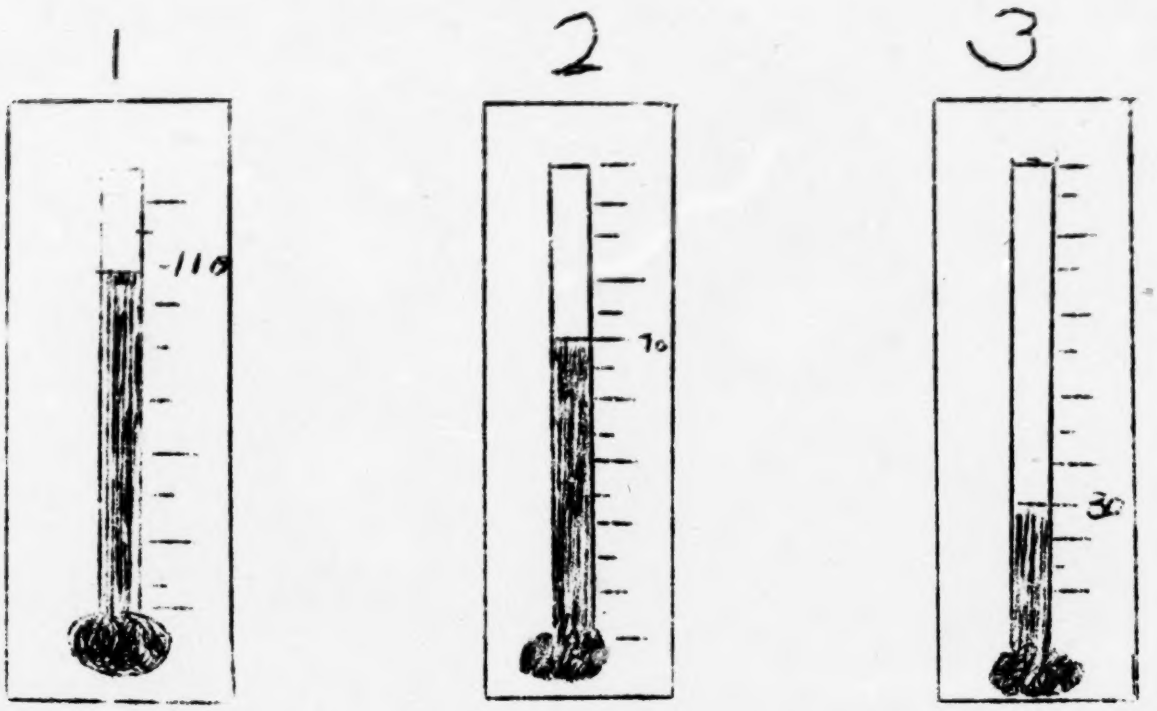
Put your thermometer in the shade.

Color this thermometer.

Is the temperature the same in sunlight and shade? ☐ yes ☐ no

Worksheet Idea

What are the temperatures?



Which is hot? 1

Which is warm? 2

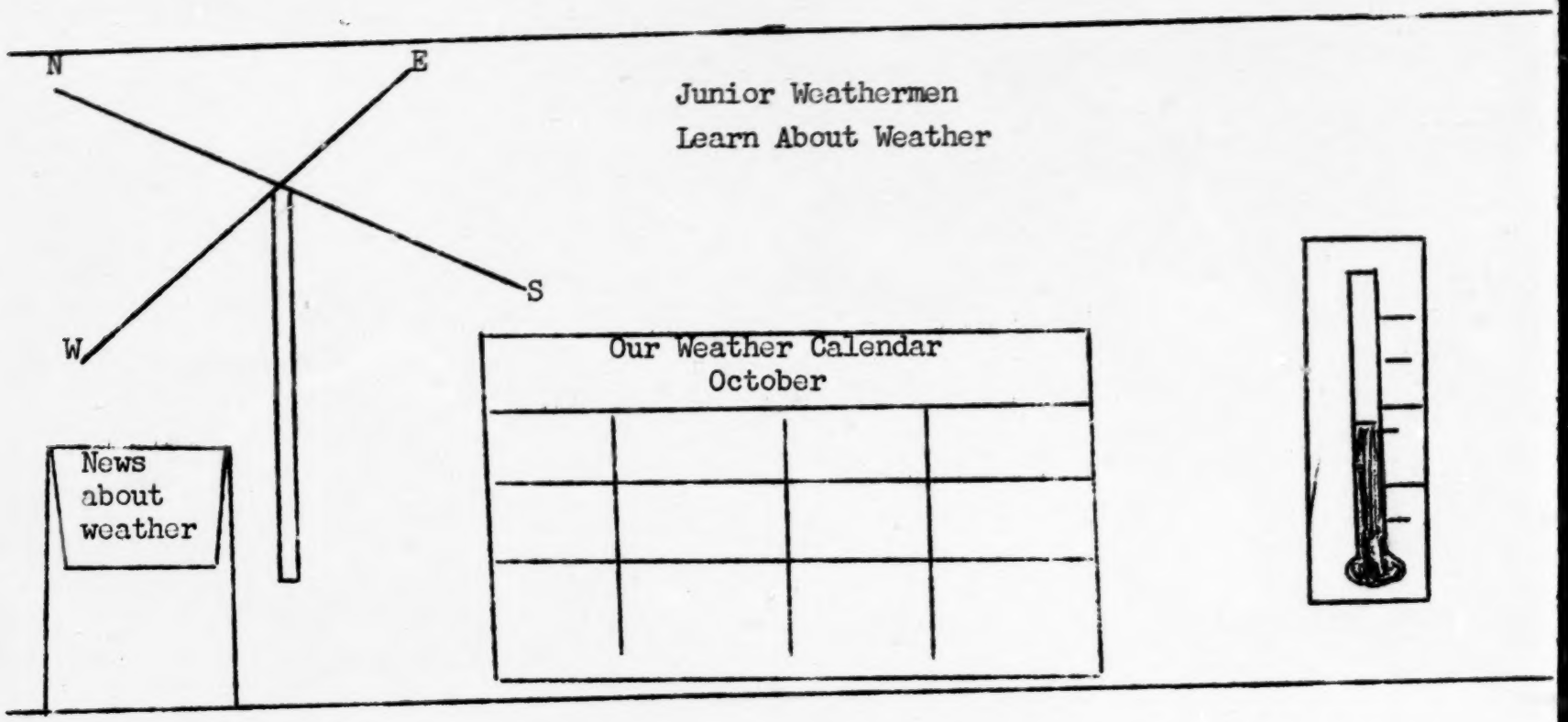
Which is cold? 3

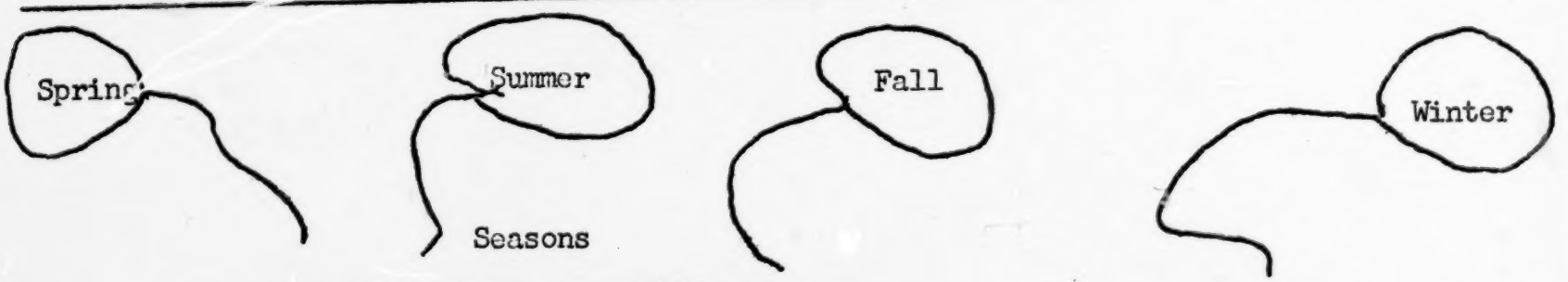
Worksheet Idea

Name _____

We put some water into a pan and put the pan on the stove. The _____ (heat) from the stove made the water _____ (evaporate) into the air. Then we held a cold pan over the hot water. Soon there were drops of water on the cold pan. When the air was cooled by the pan of ice, water came out of the air. Cold makes _____ (water) come out of the air.

Bulletin Board Ideas





Our community changes with seasons

Animals In Different Seasons

(pictures)

(pin pictures gardening,) raking, kites, snow, etc.)

Plants In Different Seasons

(pictures)

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Filmstrips

Spring and Summer	3 - 4 - E1
Autumn and Winter	3 - 4 - E2
Air, Wind, and Weather	3 - 4 - E3

ANIMALS

I TITLE - ANIMALS

II BACKGROUND

That children love animals is evidenced by their desire to own pets, and by their intense interest in turtles, mice, birds, and rabbits. Children in first grade are ready to learn that animals have certain characteristics and needs in common: they breathe, and eat; they grow and produce their own kind. The best way to understand these characteristics and needs is through firsthand study and care of animals.

III CONCEPTS TO BE DEVELOPED

A. There are many kinds of animals.
B. Animals have babies like themselves.
C. We can learn about animals by observing and taking care of them.
D. Mammals are warm-blooded, have fur or hair, bear their young alive, and are fed milk from their mothers.
E. Mammals take care of their young.
F. Mammals live in different kinds of homes.
G. Birds are animals with feathers and wings.
H. Baby birds are hatched from eggs.
I. Birds take care of their young.
J. Birds make different kinds of nests.
K. Some birds migrate when the seasons change.
L. Some animals have coloring that protects them.

IV MOTIVATION

Show the children the filmstrip, "Looking for Animals." After showing the filmstrip, ask the children if they would like to learn more about animals. The children are fascinated with animals, and will be stimulated to study animal life.

V ACTIVITIES

Concepts	Experiences
There are many kinds of animals	Take a field trip to a zoo. Let the children observe the many kinds of animals and their characteristics Extension: Materials: realistic animal books Make available a large number of books containing realistic pictures of animals. Give the children time to look through the books to discover different things

about different kinds of animals. Make a chart to show how some animals are alike and some are different.

Materials: old magazines

Help children to cut out pictures of animals from old magazines. Let them use the pictures to make an animal scrapbook, keeping birds, fish, insects, reptiles, and mammals separate.

Materials: large sheet of oaktag

Boys and girls like to make up animal riddles. After you have given them a pattern, let them try to make up some animal riddles of their own, such as the one below.

This animal is about as small as a pet cat. It has four legs. It has long ears that stand up. What animal is it? (Rabbit)

After the riddles are finished, cut a door in the upper half of a large sheet of oaktag, leaving one side uncut. Fold the uncut side back to act as the hinged side of the door. A paper fastener will hold the door closed. On separate pieces of paper, write the animal riddles the children have dictated. Clip one riddle at a time to the lower half of the chart. Behind the "door", clip a picture of the animal the riddle describes. Use as an experience chart, letting individuals open the "door" to see if they have answered correctly.

Materials: oaktag, drawing paper, colors, glue

The children may draw pictures of animals to illustrate the concept that there are many different kinds of animals. They may mount them on oaktag, cut them out, and make stick puppets of them.

Animals have babies like themselves.

Find out, by either mail or phone, whether there have been any recent births at the zoo. If so, prepare the children for the particular kind

of zoo babies they are going to see. Plan to spend time observing only the animals with young. The children will observe that the young are like their parents.

Extension:

Materials: pictures of animals and their young

Have the children bring pictures of animals and their young. Make a display of the pictures. Label the different kinds of animals.

We can learn about animals by observing and taking care of them.

It is a good idea to keep a pet rabbit, hamster, or guinea pig in the classroom. The children can observe what an animal needs in order to live and grow. Children should plan in advance for the needs of the animal and share the responsibility for its care. Taking care of the animals should not become a chore and responsibility of the teacher. If a pet is decided on, here are some things to keep in mind:

Each animal should have:

1. Enough space to move around.
2. An environment as nearly like his natural habitat as possible.
3. Proper food, water and ventilation.
4. A cage that can be kept clean.
5. Adequate food, heat, etc., over weekends.

Here are specific kinds of foods:

Rabbit - (Rabbit pellets). If pellets cannot be obtained, feed wheat or buckwheat mixed with soy beans or peanuts. Rabbits eat various kinds of green vegetables. Feed twice a day.

Guinea Pig - About the same foods as rabbits eat. Do not feed potato parings.

Hamsters - dog biscuits plus a small supply of fresh vegetables. Nuts, corn, oats, wheat and other grains.

Extension:

As children keep a pet animal, they might like to weigh and measure the pet periodically, and then make a chart to show the exact growth of the animal. The children might express their observations with such statements as:

Our pet gained two pounds during its first month in the classroom, but only one pound during the second month.

Mammals are warm blooded, have fur or hair, bear their young alive, and are fed milk from their mothers.

Have the children dictate a description of the characteristics of mammals as you write it on a large paper chart. Place this in the center of a large bulletin board. Have the children draw pictures of different mammals. Place these on the chart.

Extension:

Materials: hamsters, cage

Introduce the female hamster to your children. The female hamster provides milk for her young. She is covered with hair and bears her young alive. What better way could the children learn the characteristics of mammals than to observe one. After the children have been taught how to feed and handle the hamster, get a mate for the female hamster. Cubs can be an exciting educational experience for six year olds. The following background information might be helpful:

Male and female hamsters are usually kept apart in individual cages. For mating purposes, the female hamster is brought to the male's cage. Mating usually occurs in a few moments. Once the female is bred, she may be returned to her cage. Be sure the cage contains shredded newspaper for nesting material. The gestation period of the hamster is short. From two to fifteen baby hamsters will be born in sixteen days. In about four weeks the hamsters are ready to be on their own.

Extension:

Materials: sheets of drawing paper stapled together

Baby hamsters change rapidly each day. Urge the children to observe this growth and development carefully. Keep reminding them to look for changes. Then, have them make a picture book, showing the changes.

Mammals take care of their young.

Materials: hamsters, cage

Have the children watch the mother hamster care for her young. Discuss how the mother feeds her babies milk, keeps them clean, and protects them.

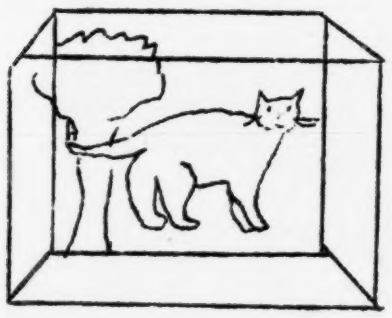
Extension:

If possible, visit a farm to observe various ways mammals protect and care for their young.

Materials: filmstrip

Use a film to show the development and care of the young of several different kinds of mammals.

Mammals live in different kinds of homes.



Materials: shoe boxes, construction paper, scrap box, glue

Have the children make dioramas of several mammal habitats. Some interesting homes might be those of polar bears, squirrels, woodchucks, beavers, and skunks.

Extension:

Make a collection of homes of mammals. Have the children write the name of the animal that made each home. Then set up an exhibit and invite other classes to see it.

Birds are animals with feathers and wings.

Materials: several pictures of different kinds of birds

Place several pictures of birds on the bulletin board. After the children have observed them for a few minutes,

ask them what the animals on the bulletin board have in common. (feathers, wings, two legs, beaks, claws, toes) Emphasize that only birds have both feathers and wings.

Extension:

Materials: a pet bird

Have someone bring a pet bird for a short visit. Discuss its feathers, beak, wings, feet, etc. You might ask the following questions:

1. Have you ever held a bird in your hand? How did it feel? Was it lighter than you might have guessed?

2. How much does a feather weigh? Which is nearer its weight - a pen or a book?

Materials: a bird feather, a magnifying glass

Get a bird feather. Use a magnifying glass to examine the feather. Pour water on the feather to see how it sheds water.

If weather permits, walk through a park with the children, looking for birds. Have the children observe how the birds use their wings to fly, glide, land, and take off.

Materials: a shallow box or tray

Build a bird feeder. The feeder will attract birds for the children to watch. A shallow box or tray attached to the window sill will serve as a feeding platform. Suet or other fat, grain, and fruit are commonly recommended for attracting birds. Let the children speculate on what the birds need, and then experiment to see what the local birds prefer. Put out whatever the children think reasonable, such as insects, hamburger, or bread.

Materials: chart paper

Prepare a chart entitled "Birds We Have Seen," with pictures or children's

sketches to represent the birds. A card may also be prepared, listing significant learnings about these birds.

Baby birds are hatched from eggs.

Materials: a hen's egg (hard-boiled, to prevent breakage)

Present the egg and ask what kind of an animal it came from. Lead the class into a discussion of chickens and the young chicks that hatch from their eggs. Through discussion, help children to recall that chickens are birds. Lead children to wonder:

Do all birds lay eggs? Through discussion, lead children to the following generalizations:

All birds lay eggs.
Each kind of bird lays its own kind of egg.

An egg hatches into the kind of bird that laid the egg.

Materials: an egg

To show that a bird develops inside an egg, break an egg in a dish. Ask the children which part of the egg would become a chicken. (The embryo is actually the small white spot attached to the yellow yolk. The yolk provides the food for the growing bird. The "white" of the egg provides the protection.)

Materials: pictures of birds and the eggs associated with them

Collect pictures of birds to display on a bulletin board. If possible, include pictures of the eggs associated with each bird.

Birds take care of their young.

Draw upon the children's experience with birds, eggs, and the young that hatch from them to develop a discussion of the care of young birds.
Through discussion, bring out these ideas:

1. The mother bird lays eggs in a nest.

2. The mother keeps the eggs warm by sitting on them.
3. The father guards the nest.
4. The mother feeds them.
5. When the birds are old enough, they fly away.

Birds make different kinds of nests.

If you are fortunate enough to locate a female bird building a nest, take the children to a place where they can watch it. The children may put out pieces of string or yarn to entice the bird. The children must be told to stand quietly, so they won't disturb the bird.

Extension:

Materials: an abandoned nest, shallow box, magnifying glass

Let the children examine the nest to see how it is put together. Then let the children take it apart. Provide shallow boxes for the various kinds of materials that comprise the nest: plant materials (leaves, twigs, bark, grasses, etc.); fur or hair; dried mud or clay; and various man-made substances (string, paper, cloth, etc.).

Encourage the children to use a magnifying glass to examine the materials more carefully. If possible, help the children to count the separate pieces to determine how many trips the bird made while gathering material for the nest. After the nest has been taken apart completely, let the children take turns trying to put it together again. They will soon discover that a bird can make a better nest than they can.

Materials: pictures of a Swift, Meadowlark, Oriole and their nests

Tell the children the names of the birds, and have the children note the different sizes and shapes of the bird's nests.

Orioles - Orioles use bits of string or cotton, or pieces of cloth, for building a nest. Have them note the long, narrow shape of the nest.

Swift - The nest of the swift is made of coarse sticks glued against a wall of a chimney.

Meadowlark - The nest of the meadowlark is made of grass and weeds.

Through discussion of the pictures, guide the class to these understandings:

There are many different kinds of nests. Each kind of bird builds its own kind of nest. The children might then like to sketch the nests of the Oriole, Swift, and Meadowlark.

Some birds migrate when the seasons change.

Materials: globe, colored string, picture of birds, tape

Show the children pictures of common migratory birds in your area. Find out the migration route of the various birds and show their routes on a globe. Attach colored string to the globe with tape, showing where the birds migrate to and from each year.

Some animals have coloring that protects them.

Materials: two one dollar bills, piece of red paper, piece of green paper

Place a one dollar bill on a bright red piece of paper and another one dollar bill on a dark green piece of paper. Which dollar bill is harder to see? The children will discover that the dollar bill on the green piece of paper is much harder to see because the coloring is so much alike.

Extension:

Materials: construction paper of various colors, a grass background on a bulletin board

Have each child make a bird from the various colors of construction paper. Then let the children put the birds in the grass background. They will see that some birds are very easy to see, while other birds have coloring that helps to protect them.

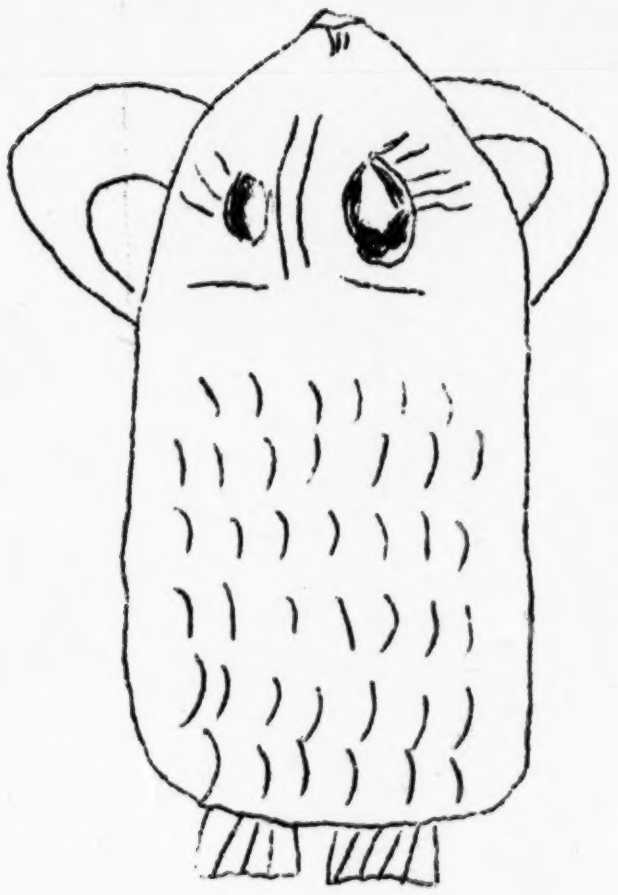
Extension:

Materials: pictures of animals

Find pictures of various animals such as a fawn, a frog, caterpillar, polar bear, showing how the animal's coloring helps to camouflage them.

ENRICHMENT ACTIVITIES

Plastic Animals



Imaginations go wild!
Plastic bottles of varying colors, shapes, and sizes are all that's needed. The bottles are easily cut if placed in warm water beforehand. Felt-tip markers, scrap materials, and construction paper provide the necessary details.

Bird Song Records

One of the nicest ways to get acquainted with birds is to listen to them. The American Bird Song records made by Cornell University brings the songs of many birds into your classroom.

Audubon Junior Club

Your class at school will find that "birding" is more fun if you form an Audubon Junior Club. Write to the National Audubon Society, 1000 Fifth Avenue, New York, New York, for details. Members receive a membership button, leaflets about birds, and a booklet full of ideas for interesting bird-study activities.

Games

Bird Sleuth - One player is chosen to be It. He chooses a bird and then begins to describe it, one characteristic at a time. The other players

try to guess who It is. The first one to do so correctly gets to choose and describe the next bird.

Match It

Cut one large animal picture out of a magazine for each four players. Then cut each picture into four irregular pieces. There should be one piece of a picture for each player. Mix all the picture pieces together. Each player then grabs a piece and tries to find the other players who have parts of the same picture. The group which puts together its animal picture first wins.

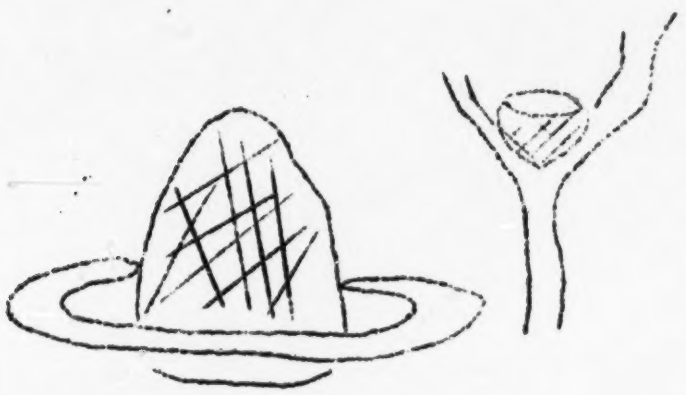
What Am I?

Provide a small piece of paper for each player. Write the name of a different well-known animal on each piece of paper. Pin a name on the back of each player. The players try to find out what they are by asking each other questions which can be answered by "yes" or "no." The game continues until everyone has discovered what he is.

VI APPENDIX

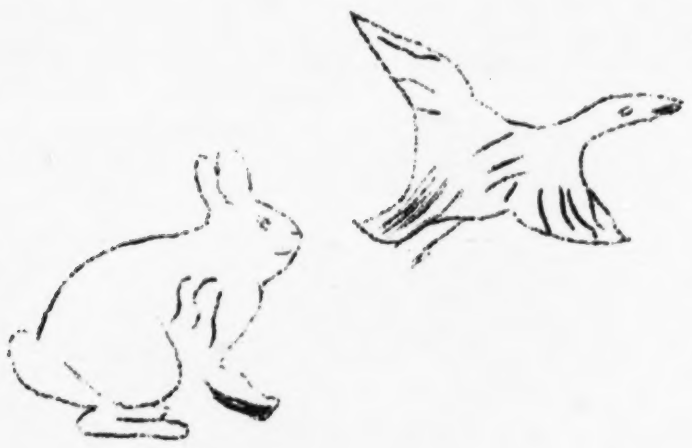
Worksheet Ideas

Look at these pictures. Draw a circle around the picture that answers each question.

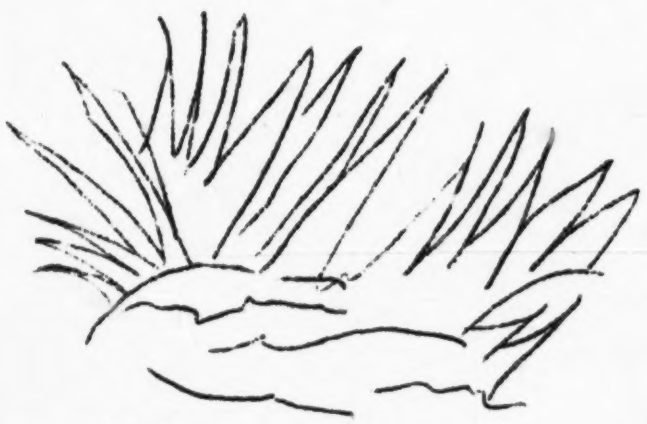


Which home does a beaver make?

Which animal can fly?



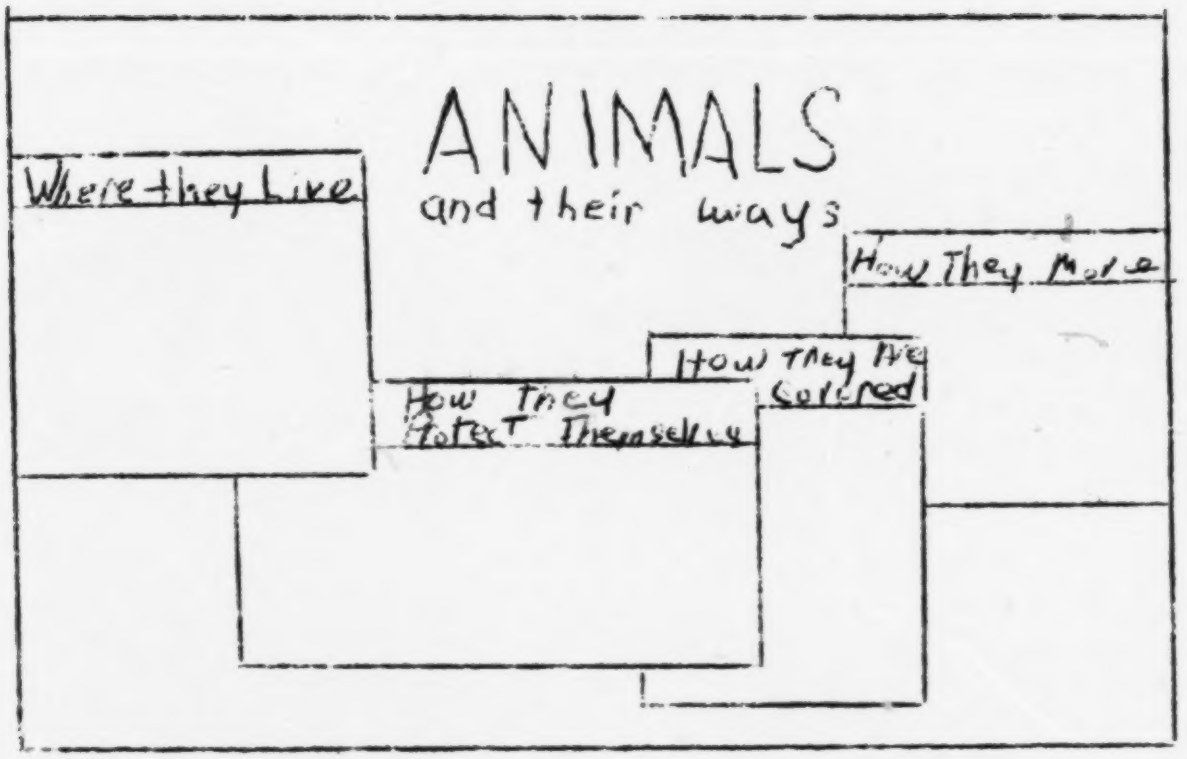
Which animal has feathers?



Where is it hard to see a green bird?

Bulletin Board Ideas

Bulletin Board Idea



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Filmstrips

Looking For Animals	3 - 1 - D1
Mammals of North America	3 - 1 - D2
Rabbits	3 - 1 - EL
Birds	3 - 1 - D7
Birds of the Zoo	1 - 5 - A8
Birds Nests	3 - 1 - B4
Mama Cat's Babies	1 - 5 - FL
The Lost Hamster	1 - 5 - F5
Just Animals	3 - 4 - E4
Animals Grow and Change	3 - 4 - E5
Animals to Know	1 - 6 - A5

GROWING UP

I TITLE - GROWING UP

II BACKGROUND

Children are interested in evidence of their own growth. They are eager to be recognized as "big boys" and "big girls." They relish the fact that they are no longer babies.

This unit deals with the growth and change of the human body, and with factors that affect growth and change.

III CONCEPTS TO BE DEVELOPED

A. All living things change and grow.
B. Children grow at different rates.
C. Our bodies need food for growth.
D. Our bodies need exercise for growth.
E. Our bodies need sleep for growth.
F. Children have two sets of teeth.
G. Different teeth have different functions.
H. Children must take good care of their teeth.
I. Washing helps to protect our bodies from germs.

IV MOTIVATION

Take the class to watch a class of fifth or sixth grade children engaged in baseball or some other game. Make the observation period a short one, just long enough for the children to see some of the things the big boys and girls are able to do. Then lead into the unit with this question:

"What are some things first-graders must do to help them grow bigger and stronger?"

This question should start a good discussion on growing up.

V ACTIVITIES

Concept	Experiences
All living things change and grow.	Materials: baby shoes, baby socks Suggest that some children bring in baby shoes. Let the children compare the shoes they are wearing with the tiny shoes they wore when they were babies. They will be surprised to see how much their feet have grown. Baby socks may also be used for a similar comparison.

Extension:

Materials: chalkboard, chalk

Plan a frieze to display across the top of the chalkboard or bulletin board. Start by tracing the hand of the youngest child in the class. Add a tracing of the hands of children of increasing age, "borrowing" pupils from upper grades to complete the series. Write the name and age of each pupil near the tracing of the hand.

You might also have each child trace the hand of his mother or father and bring it to class. Then have him compare the size of this tracing to the tracing of his own hand. Or to show the difference in size, the children might trace the hands of several adults in the school building, comparing these tracings with tracings of their own hands.

Extension:

Materials: small cake or pie plates, modeling clay, paints

As an extra project the children might make clay plaques of their hands to take home. Fill small pie or cake plates with modeling clay and press the hand of each child in a plate of clay. Dry the clay for a few days and remove the plate. Then let the children paint their plaques with water paints. Write the date on the back of the prints and let the children take them home to keep.

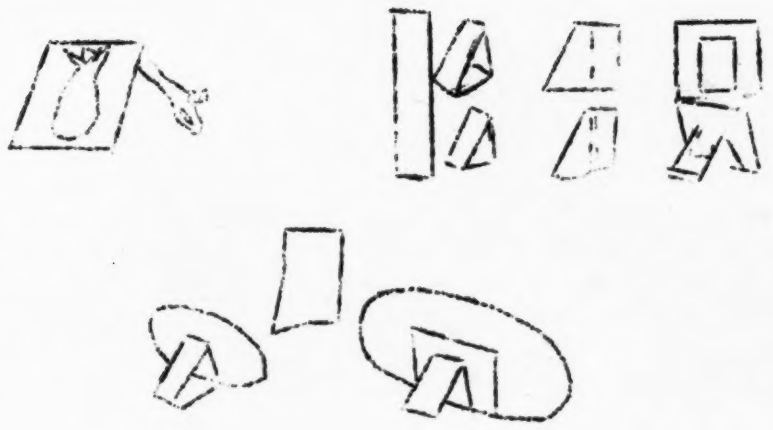
Materials: photographs

Have the children bring in baby pictures of themselves. Try to obtain a sequence of twelve baby pictures showing the developmental changes that take place during the first twelve months of human life. Plan a bulletin board display which shows this sequence.

Our bodies need food for growth.

Materials: drawing paper, crayons

Let each child choose his favorite meal (breakfast, lunch, or dinner) and make



a picture of the things that he or she thinks are good to eat at that meal. By discussing the pictures with the child who made it, you will be able to evaluate the child's individual knowledge of good foods.

Extension:

Materials: magazines, pieces of cardboard

Let the children make food cut-outs to use for weekly food menus. First have them cut pictures of foods from magazines. Then have them make cardboard stands and mount the pictures on them. The children will enjoy using the cut-outs to show good menus.

Materials: chart paper

While studying foods for growth, each child may keep an individual record. Emphasis can be placed on a few essentials by having the children record only three categories of food:

1. Milk, if they drink at least three glasses.

2. Meat and related foods.

3. Fresh fruit and vegetables and juice.

A week should be sufficient time to maintain the chart.

Materials: magazines

Cut out magazine pictures that show good breakfast and lunch foods. Arrange a display.

Materials: drawing paper

You might like to make a Picture Dictionary of Foods. Have each child take one letter of the alphabet, and then ask each child to write a simple sentence for a food whose name begins with that letter. Each child will contribute his page to the class dictionary.

Visit a local market to see a variety of vegetables, meats, and dairy products.

Our bodies need sleep for growth.

Materials: poster paper, pictures

Help the children make a large poster with cut-out pictures of animals and children sleeping and resting.

Materials: picture of a child resting, picture of a child sleeping

Use a picture of a child resting with eyes open and another picture of a child with his eyes closed sleeping. Ask the class at what times do they rest and at what times do they sleep.

Involve the entire class in a running activity in the school gym. Reassemble the group and point out to them how heavily everyone seems to be breathing. Note the need for our bodies to have a short rest period.

Our bodies need exercise

Start a discussion based on these questions: Where is your heart? How do you know it is there? What does your heart do?

Explain to the children that when they exercise, their heart beats faster, pumps more blood, which is good for their bodies. Have them jump up and down a few times. Then have them verify that the heart beats faster, by feeling the pulse in their necks, wrists, and temples.

Extension:

Materials: piece of cardboard

A rolled-up piece of cardboard makes a rough equivalent of a stethoscope. Have the children listen to each other's heartbeats. Then have the children touch their toes five times. Have the children listen again to each other's heartbeats. Ask: "Which time was the heartbeat faster?"

Children grow at different rates.

Materials: chart paper, yardstick

The class can start a chart called, "Growing Taller." Measure each child's height, and write the measurement on the chart. Every week, enter the child's height measurement. Note any growth changes that occur.

Extension:

Materials: bathroom scale

Show the scale to the class and ask what it is used for. Then, have a boy and girl of about average size come forward. Weigh them and write their weights on the board. Explain that some first-grade children weigh more and some weigh less than the weights written on the board.

Materials: long strip of tag board, silhouette of a baby

Make a class measuring chart by fastening a long strip of tag board to the wall. Mark off inches on the strip. Cut out a rough silhouette of a baby, 20 inches high, and fasten it to the bottom of the chart. Then, measure each child by having him stand against the chart while you make pencil marks for his height, determined by holding a ruler level across the top of his head. Write children's names or initials beside the lines that indicate their respective heights. Children will enjoy noting how much taller they are than their 20 inch baby height.

Materials: large sheets of paper, pencils

Give each child a large sheet of paper and show how to trace around their feet. Children may divide into pairs and trace each other's feet, since it is difficult to trace one's own foot. This will give pupils opportunities to work co-operatively and to compare foot sizes. Homework might consist of tracing Mother's of Father's foot and bringing the tracing to school.

Children have two sets of teeth.

Materials: x-rays from a dentist

Some of the children might try to obtain x-ray pictures taken by a dentist. Have the children bring the x-ray pictures to class for discussion. The children will be able to see the permanent teeth growing under the baby teeth.

Extension:

Let the children explore with their tongues to find out if they are getting or already have, a six year molar. It is the first of their permanent teeth.

Different teeth have different functions.

Materials: small pieces of an apple.

Give each child a small piece of apple to eat. Have each child try to break the piece of apple without using his teeth. Then, give another piece of apple to each child, and have each child chew with his teeth. Then ask the following questions:

Which teeth did you use to bite the apple?
Which teeth did you use to chew the apple?

Extension:

Materials: a model of a set of teeth

Obtain from a dentist a model of a set of teeth. Have the children observe the teeth and locate the teeth used for biting, grinding, and for tearing.

Materials: scissors, fork and knife, nut-cracker

Explain to the children that food must be finely broken up so that our bodies can use it for energy and growth. Help the children to see that teeth are considered tools, since they do the work of cutting, grinding, and tearing.

Have them note the front teeth. Show that they are flat and wedge-shaped and can cut like a pair of "scissors." Ask them what teeth they would use to tear

off a piece of steak or a piece of tough taffy. Call attention to the strong pointed bicuspids and compare them to the common household tools, "knife and fork."

Last, ask them what teeth they would use to chew something. Point out that the molars are flat and broad, with projection that can grind against each other. Compare the molars to a nutcracker. By comparing the teeth to these common household tools, the children will be able to understand how the shape and position of their teeth are adapted to their functions.

Children must take good care of their teeth.

Materials: comb, peanut butter, toothbrush

Discuss with the children the importance of brushing their teeth after eating to prevent tooth decay.

The correct way to brush teeth can be demonstrated by smearing peanut butter over a clean comb. Use a toothbrush to remove the peanut butter caught between the teeth of the comb. Then ask the following questions:

What is the best way to move the toothbrush when you clean the sides of your teeth? (Up and down.)

Extension:

Materials: chart paper

Explain to the children that it is important for them to care for their baby teeth, so that their new teeth, which are permanent, will last them the rest of their lives. The children might help you make a chart like the following:

How Can We Take Care of Our Teeth

1. Brushing after each meal.
2. Regular visits to the dentist.
3. The need for proper diet.

Washing helps to protect our bodies from germs.

Materials: paper, magnifying glass

Have the children look at their hands. Call attention to the lines and creases in their palms. Then let them look at their hands with a magnifying glass. The ridges and furrows will be more evident. Explain that dirt can lodge very firmly in the furrows. Then, crumple a piece of paper. Put dirt on the crumpled paper and also on a plain piece of paper. Tilt both pieces of paper at a large angle. Which piece holds more dirt? From which piece does the dirt slide off easily?

The children will discover that crumpled piece of paper, like the creases in their hands holds more dirt. Explain that this is what happens when you touch food with dirty hands and that, since germs cause many illnesses, this is one way people get sick.

Extension:

Materials: two basins of water, bar of soap, two towels, and a magnifying glass

Have two children rub their hands on some desk tops. The hands of both children should be slightly soiled from this. Then, have one of the children wash his hands with only water and a washcloth. Have the other child wash is hands with water, a washcloth, and soap. Compare the two children's hands under a magnifying glass. Which child's hands are cleaner?

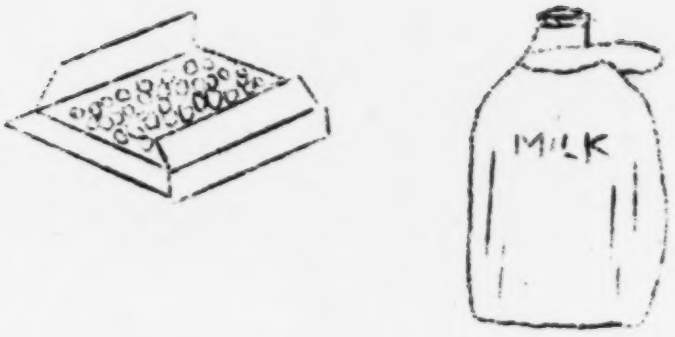
Materials: two wash basins, two soiled pieces of cloth, soap, warm and cold water.

Tell the children to find out if warm water is better than cold water to wash things clean. Have as many children as possible working. Let one child wash one piece of soiled cloth in a basin of cold water while another child washes a piece of cloth in warm water. Then hang the cloth up to dry. Have the class note the difference in the two pieces of cloth.

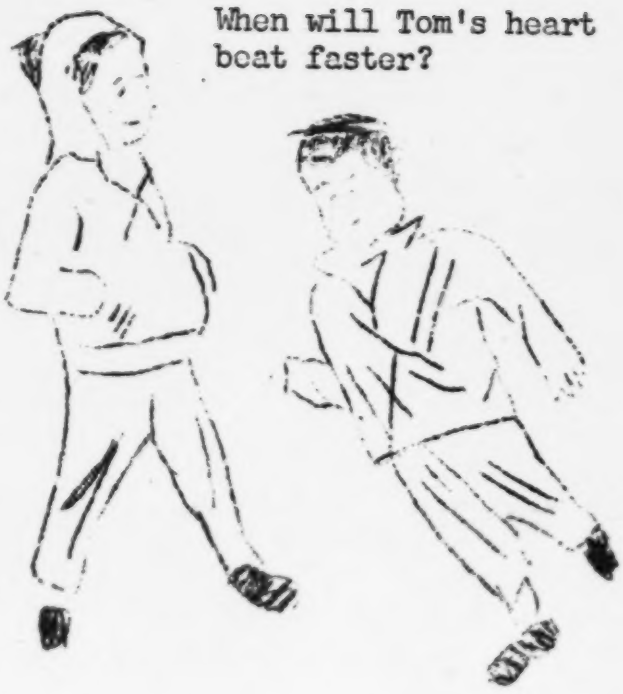
V APPENDIX

Worksheet Ideas

What makes teeth strong?



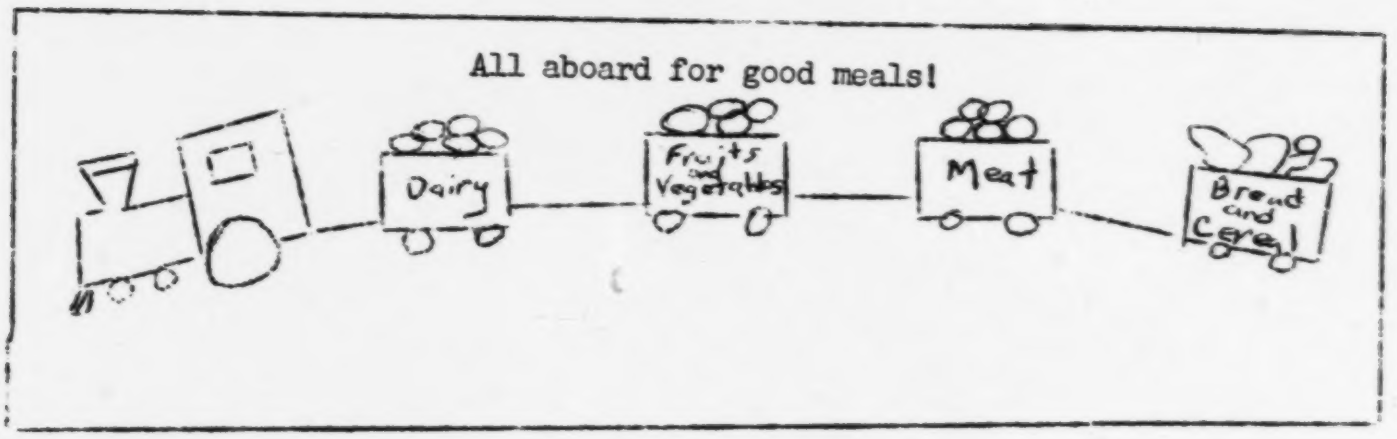
When will Tom's heart beat faster?

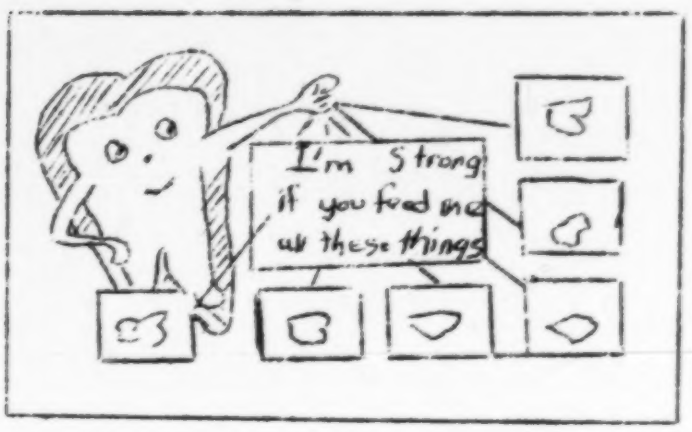


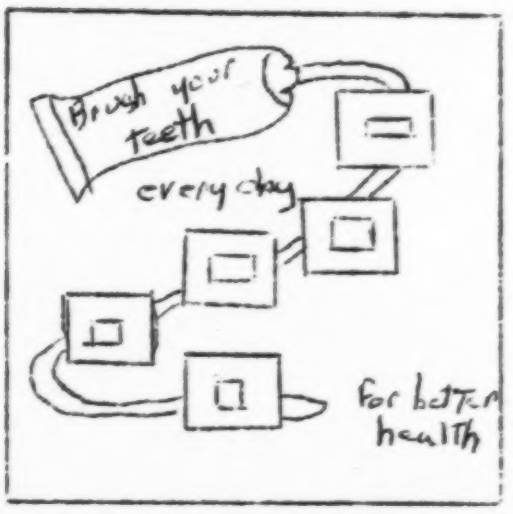
Who helps you take care of your teeth?

Which is a way to exercise?

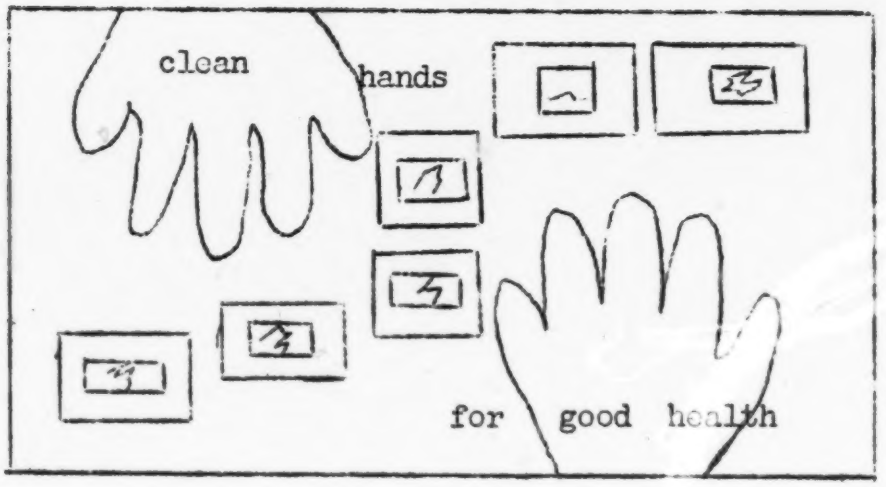
Bulletin Board Ideas







Bulletin Board Idea



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Filmstrips

How Your Body Grows	1 - 5 - B4
Food For Health	1 - 5 - E1